FEBRUARY 1954

AMERICAN ARTISAN

Warm Air Heating
Residential Air Conditioning
Sheet Metal Contracting

• WARM AIR heating system is installed in 5¼ hours by a three man crew. Here, branch ducts are installed .. page 40

• HOW TO SERVICE air conditioning equipment .. page 44

• OLD ROOF is repaired in an unusual way ..... page 48

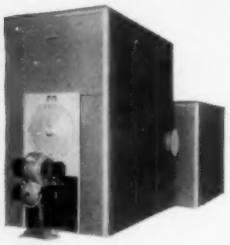
• WHAT BUSINESS costs are tax deductible? .... page 70

• Complete contents of this issue ..... page 4

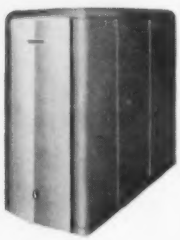
J-C QUALITY FURNACES

AVAILABLE AT THESE "KEY" STOCKING JOBBERS

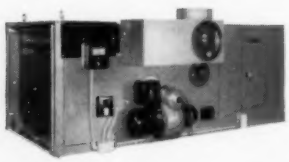
In '54 take a look at the BIG non-residential market. These "key" jobbers have an adequate stock of BIG JACKSON & CHURCH INDUSTRIAL AND COMMERCIAL FURNACES to provide you with the "key" to the estimated 487,000,000 square feet of NEW non-residential building to be heated in '54.



POWERATED — long noted for industrial heating and industrial ventilating where outside air is introduced. Outputs from 380,000 to 3,800,000 Btu. Oil, gas and coal fired.



POWERAIRE — for most commercial and large residential jobs. Air conditioning units can be added to system. Outputs from 152,000 to 320,000 Btu. Oil and gas fired.



SUSPENSION — the pioneer line of horizontal units. Available in widest range ever, 80,000 to 1,000,000 Btu output. Oil and gas fired . . . with UL and AGA approval.

CONNECTICUT
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Gearing & Stockburger

FLORIDA
Jacksonville
Horne-Wilson Inc.
Orlando
Hughes Supply Co.
Pensacola
Foster Company

GEORGIA
Atlanta
Atlas Supply Co.
Dealer Supply Co.

INDIANA
Fort Wayne
Mossman Yarnelle Co.
Gary
G. W. Berkheimer Co., Inc.

ILLINOIS
Chicago
Chicago Furnace Co.
Rockford
Mott Brothers Co.

IOWA
Des Moines
Heating Wholesalers
Sioux City
Heating Wholesalers
Waterloo
Heating Wholesalers

MASSACHUSETTS
Newtonville
Northeastern Equipment Co.

MICHIGAN
Detroit
Detroit Safety Furnace Pipe Co.
Star Steel Supply Co.
Superior Safety Furnace Pipe Co.
The Burton Co.
W. T. Andrew Co.
Marshall
Livingston, Inc.
Saginaw
Saginaw Furnace
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Michigan Plumbing & Heating Supply Co.

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Famous Furnace Co.
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Milwaukee Stove & Furnace Supply Co.
Steel King Company, Inc.
Stevens Point
Kleenaire Corporation

J-C furnaces are also available from many other wholesalers. If the distributor in your area does not carry J-C furnaces, write Jackson & Church Co.

. . . America's Largest and Most Complete Warm Air Heating Line . . .

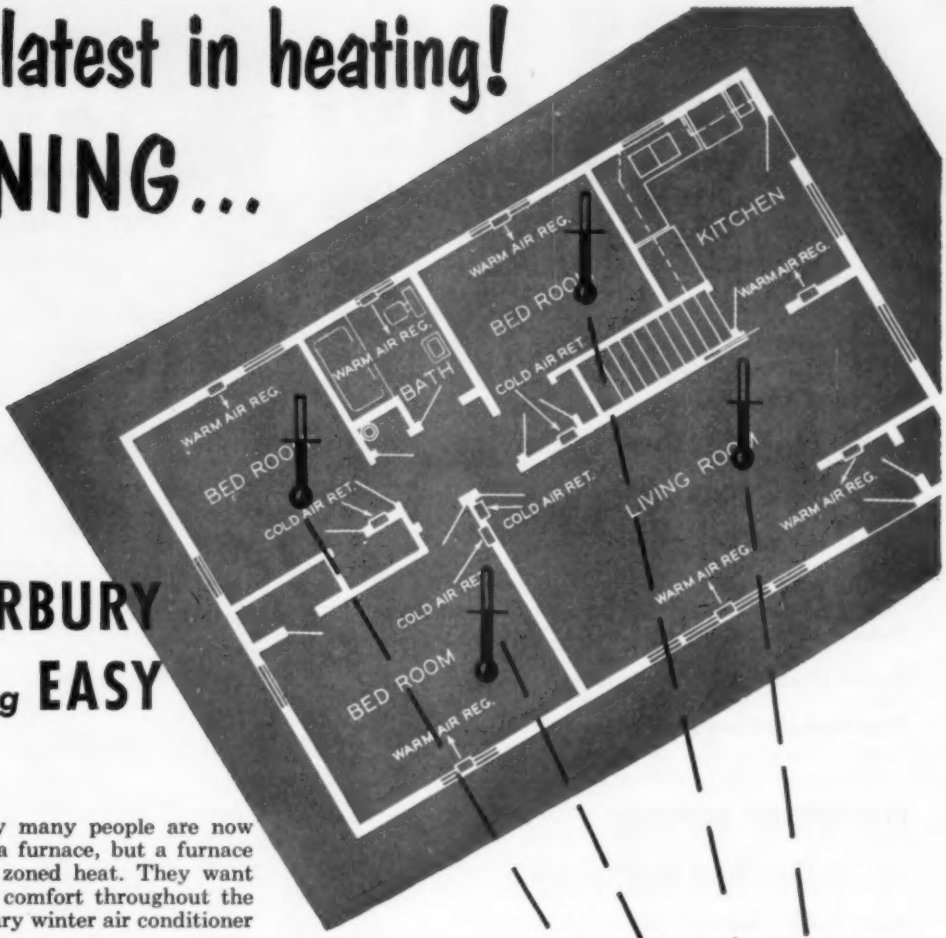
J-C

JACKSON & CHURCH CO. SAGINAW, MICHIGAN

Work well done since eighty-one

It's the latest in heating!

ZONING...



and WATERBURY *makes zoning* EASY

All over the country many people are now demanding not just a furnace, but a furnace that will give them zoned heat. They want the type of uniform comfort throughout the home that a Waterbury winter air conditioner will give them.

Zoned heating makes it possible to have the same temperature all over the house, or different temperatures in different parts of the home. The Waterbury line of furnaces and winter air conditioners is ideal for this purpose, as many Waterbury units are built to provide zoned heating without change, and all can be adapted to it.

Waterbury *furnaces*

AND WINTER AIR CONDITIONERS

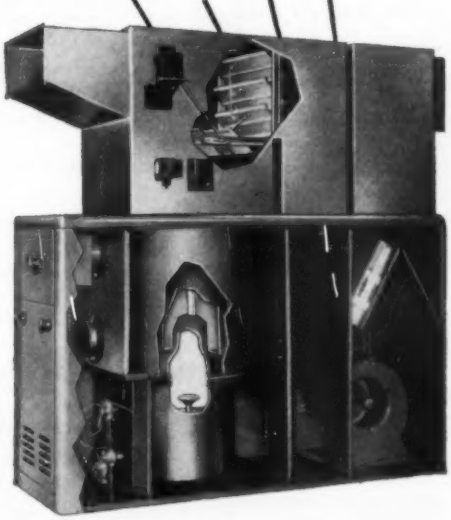
The Waterman-Waterbury Company has specialized in warm air heating for almost half a century. It manufactures a complete line of furnaces, and winter and summer air conditioners. The Waterbury line is nationally known as a quality product.

Write today for information on the comprehensive Waterbury dealer-distributor-factory policy.

The Waterman-Waterbury Co.

OVER 47 YEARS OF WARM AIR HEATING

1122 Jackson St. N. E. • Minneapolis 13, Minnesota



Comfortrol By-Pass systems can be installed in various combinations. Shown here is a typical installation.

AMERICAN ARTISAN

FEBRUARY 1954

FEATURES

Ike Urges More Housing 29

5¼ Hours to Install Warm Air System 40

Diagnosing Cooling Equipment Ills 44

New Roof Keeps "the Old Look" 48

Heated Slab, Baseboard Registers Perform Well 50

Making a Double Elbow for Special Uses 54

Modern Ductwork — Techniques and Problems 58

What Business Costs Are Deductible? 70

CONVENTION REPORTS

"We Need More Sheet Metal Apprentices" 52

Home Builders Like Cooling 66

DEPARTMENTS

The Editor's Notebook 6

What's Happening 23

Washington Letter 29

Editorial: "Making the Service Dept. Pay" 39

Hugh Reid's Pattern Problem 54

Your Business and the Law 70

What the Associations Are Doing 96

Equipment Developments 100

New Literature 127

We Hear That 129

Appointments 136

Index to Advertisers 150

Founded 1864

Volume 91 No. 2

WARM AIR HEATING

RESIDENTIAL AIR CONDITIONING

SHEET METAL CONTRACTING

Merged with American Artisan are "Warm Air Heating" and "Furnaces and Sheet Metals"

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Fits any space heater equipped with A-P oil control valve. Comfortable automatic heating by setting the dial.

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Ends oil handling. No spilling. No messy cans. Completely automatic. Lifts to third story.

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the editor's notebook

Thumbing Through This Month's Artisan

. . . we get some hints on good field management — the kind of management that makes it possible for three men to complete a heating installation (including a furnace, 12 supply outlets and six returns) *in 5¼ hours.* Sleight of hand? No, just careful planning, according to the article, 5¼ Hours to Install Warm Air Heating System, which points out that the only "trick" involved is detailed layout work, well engineered pre-job assembly at the shop, and a high degree of planned coordination once the erection crew is on the job.

. . . and we also get some important hints on trouble shooting in S. W. Reid's newest article, How to Diagnose What's Wrong in an Air Conditioning System. The service man arrives at the customer's home. There's "something wrong with the air conditioning." What's the first step? This 17th in Artisan's series of articles on air conditioning fundamentals points out all the possibilities — defective parts, system out of balance for some reason, etc., explains how the service man can determine what is the specific cause of malfunctioning, and offers some suggestions on how he can decide on the best cure in each case.

. . . and we also note that the new techniques and materials which have widened the applications of modern ductwork also have brought with them some problems. Duct design nowadays requires a lot more experience than in "the early days," says Lawrence O. Paul in his article, Modern Ductwork — New

HERE THEY ARE...SENTRY'S TWO NEWEST ADDITIONS TO THEIR EVER-POPULAR

AT-A-GLANCE (DIRECT AND REMOTE) TANK GAUGES

THERMA-GAUGE

A superior quality, precision instrument with full view, solid red thermometer-type indicator

Without question, here is the easiest to read, *accurate measure* gauge on the market—And, the easiest to install, whether tank is empty, full or partially full. Unit features zinc base metal, two-piece die-cast assembly — Unbreakable red plastic assembly nut — Calibration chart, sealed between heavy, heat-resistant plastic domes — Brass rivets — And, a *double coated* cork float that's impervious to oil, many chemicals and acids. No gears, magnets, cams or tapes. Guaranteed to withstand in excess of 70 lbs. pressure per sq. inch. Tailor-made to fit individual tanks up to 12 ft. deep. Calibrated and factory adjusted.

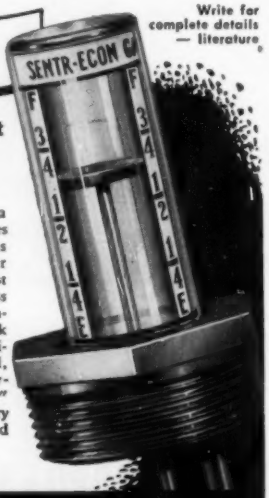
QUICKLY, SIMPLY INSTALLED. Illus. at left shows how entire calibration and float assembly may be inserted and positioned *after* two piece die-cast tank plug has easily been installed in tank — only an ordinary wrench is needed.

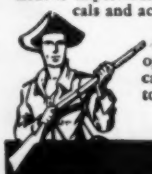
SENTR-ECON

Write for complete details — literature

A new, durable, low cost instrument for economy installations.

Excepticnally high quality for such a competitively priced gauge. Features patented *double dome* with calibrations positioned between inner tube and outer heat-resistant plastic shell. Also, die-cast tank fitting — plated metals — brass rivets. No gears, magnets, cams or intricate mechanisms. *Double coated* cork float is impervious to oils, most chemicals and acids. Simple to install, even in partially-filled tanks. 1½" openings only. Factory calibrated and adjusted to insure accuracy.





KRUEGER *Sentry* GAUGES

GREEN BAY • WISCONSIN

the editor's notebook

(continued)

Techniques, New Problems. And as the title implies, there are other problems — such as determining who's responsible for the effective functioning of the system. Is it the engineer or the sheet metal man? Mr. Paul discusses a proposed code covering practices for ventilation and air conditioning work which would clarify responsibility in this matter.

. . . and then we come to the inevitable — taxes. And with this, the inevitable question — "What business expenses can I call deductible?" This month's article in the Artisan's regular series by Albert W. Gray, Your Business and the Law, tells us how various courts have answered this question. The heating, air conditioning and sheet metal dealer can deduct the expenses which are "ordinary, necessary and directly connected to his business." But what the courts consider "ordinary, etc." varies from time to time. The ramifications of these key terms are brought out by Mr. Gray, who has been a practicing attorney for over 20 years.

Sheet Metal Contractor Inspects Tokyo Ducts

BACK IN 1913, the Narowetz Heating & Ventilating Co., Chicago, fabricated the ductwork and supplied the blowers for a ventilating system to be installed in the Imperial hotel, Tokyo, Japan. This was long range engineering at its best, and ever since the day the last piece of equipment was shipped out it has been the desire of Louis L. Narowetz, son of the founder of this company, to personally inspect this installation. Last fall Mr. Narowetz made a vacation trip through the Orient,

300,000 SQUARE FEET...

DEVOTED TO THE PRODUCTION OF PREFABRICATED FURNACE FITTINGS, GRILLES, HUMIDIFIERS, RAIN GOODS

YOUR ASSURANCE OF QUALITY AND SERVICE

We're proud that under one roof, we can devote 300,000 square feet of floor area to providing better service for our customers. To you it can mean truckload discounts without large inventories, savings in time and money when figuring costs, savings in space, and, above all, a complete line of well-engineered registers, fittings, humidifiers and rain goods.

YOUR CHOICE OF GALVANIZED OR ALUMINUM

Char-Gale fittings are currently being produced in *both galvanized and aluminum, in quantities to suit your needs.*

YOUR PROOF OF CHAR-GALE FORESIGHT

First in the production of forced air prefabricated ducts.
First in the use of aluminum for ducts and fittings.
First in the packaging and cartoning of fittings.
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First to design the increased capacity 4½-inch system.

YOUR BEST SOURCE OF

- ★ Aluminum Fittings
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- ★ Humidifiers
- ★ Rain Goods
- ★ Registers—Complete Line, both Perimeter and Conventional including Floor Diffusers

For Information and Catalogs, Contact Your Jobber or Write Direct to

CHAR-GALE MANUFACTURING CO.
ANOKA, MINNESOTA

the editor's notebook

(continued)

visiting Manila, Hong Kong, Yokohama, Kobe, and making a tour through the Japanese interior before reaching Tokyo.

He found that the Imperial hotel had survived a number of earthquakes and bombings and that the 40 year old duct system had survived these abnormal conditions unusually well. In a conversation with the hotel's chief engineer who had been present at the time the original ductwork was installed in the ventilation system, he learned that it had been an easy matter to make the installation according to the instructions supplied by the Narowetz company because the engineering had been so thorough.

Home movies were taken of the installation, and recently at a dinner party for his friends and associates, Mr. Narowetz described the history behind the pictures, pointing out many of the antiquated methods still being used in the Orient in the fabrication of ventilation systems.

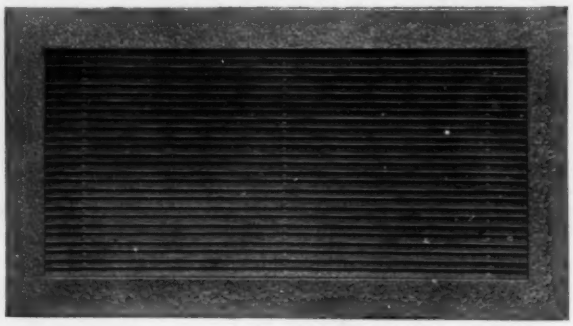
Steel Capacity At All Time High

AT THE START of 1954, the steel capacity of the United States was 124,330,410 net tons of ingots and steel for castings annually — the highest level ever achieved and an increase of 6,782,940 tons during 1953, according to the American Iron and Steel Institute. The new annual capacity figure is an increase of more than 32 million tons, or 35 per cent, in the eight postwar years. It is a gain of over 52 per cent since 1940.

Ship Over a Million Room Coolers

SHIPMENTS of room air conditioners for 1953 totaled approximately 1,075,000 units,

NEW! Thin-Core Grilles For Doors—Partitions ¼" to ¾" Thick!



- **CUTS INSTALLATION TIME ½!**
- **EASY TO INSTALL — NO DANGER OF RUINING DOOR!**
- **COMPLETE — NO WOOD MOLDINGS TO ADD!**

A-J

First Grille ever designed specifically for thin doors and partitions. Anyone can install it in just a few minutes time. No close tolerances required . . . almost a half-inch extra on sides for positioning. Telescoping auxiliary frame fastens to grille with posts and screws. Clamps tight. No holes to position. Practically no danger of ruining door. No wood moldings. All steel. Rattle-proof. No vision, with 80% free area. Available with or without frame, all sizes. Gray or tan prime coated, or Hammertone finish in gray or bronze.

ACTUAL SIZE CROSS SECTION

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FREE CATALOG

Listing Over 1000 Types and Sizes of Grilles for Every Requirement

A-J MANUFACTURING CO.

Dept. A2
2119 Washington St., Kansas City, Mo.

the editor's notebook

(continued)

compared with 365,451 units in 1952, according to Geo. S. Jones, Jr., managing director of the Air-Conditioning and Refrigeration Institute. This growth is indicated by manufacturers' shipments last year of 1,055,000 window sill type units and 20,000 floor type units of 1½ hp and under, according to estimates recently compiled by the institute.

Gas Heat Offer Goes to 17,000

SEVENTEEN thousand Chicago families recently received notice that they can heat their homes with gas. The 17,000 are at the top of the list of about 114,000 applicants in the files of the Peoples Gas Light & Coke Co.

Home owners have until September 1 to complete the installation. Those who decide against gas heating at this time will surrender their priorities to other applicants.

Says More Standardization Needed

THE GROWING need for standardization in an increasingly populous and mechanized world was discussed in a recent address by Roger E. Gay, president, American Standards Association. He predicted that by 1975 there would be 193 million people in the United States, and gross national production will be $566 billion — double that of 1950. To cope with the complexities of such a world, he said, we must learn "to make things fit and to make things work through standardization of machines and parts, of blueprints and drawings, and of words and definitions."

He pointed out that we have been using standards to solve problems when we

LOCKFORMER

makes them

BETTER...

Every lock is perfectly uniform, needs no further prying open . . .

FASTER...

Fifteen times as fast as hand methods . . .

CHEAPER...

Saves over 90% in seam-making costs, cuts over-all fabrication costs IN HALF!

ONE MAN WITH A LOCKFORMER MAKES MORE PITTSBURGH LOCKS THAN SIXTEEN MEN WITH EIGHT BRAKES

THE LOCKFORMER CO.

WRITE FOR CATALOG TODAY

4615 WEST ROOSEVELT ROAD
CHICAGO 50, ILLINOIS

the editor's notebook

(continued)

should be using them to prevent problems from arising. "Predetermined standards are a basic requirement of an orderly transition from today's mechanization to tomorrow's new machine age," he explained. "Standards are the key elements in management control, coordination, integration, and planning."

Cites Advantages of Engineering Education

FREDERICK S. BLACKALL, Jr., president of the American Society of Mechanical Engineers, spoke recently on the subject of the merits and objectives of an engineering education. "An engineering curriculum," he said, "possesses a tremendous potential for bestowing on its students the rare quality of the ability to think—to face facts. The successful engineer must school himself to seek the facts, to coordinate them, and to let them direct him to a sound and logical conclusion."

Sound Selling Creates Good Public Relations

THEME of a talk given at the recent annual convention of the American Gas Association by E. H. Eacker, vice president, was that sound selling creates sound customer relations. "Sound selling does not stop with the sale of a piece of equipment," Mr. Eacker said. "Our customers buy our product not for the product itself but for the results obtained with it. They want those results day in and day out. They want to know before they purchase that the source of the product is a dependable one. They want prompt equipment service, and they want familiar personal contact as problems arise. Familiarity with your

and, here's why—

Beneath the rich crinkle finish of the TALL RED lies a real Royal secret for heating satisfaction. It's the amazing dimpled heating element.

This unique feature of the Royal Jet-Aire is designed to distribute heat evenly, eliminate the danger of overheating, condensation, and burning out or rusting out, and is your guarantee of quiet operation.

Its quality features make the Royal Jet-Aire today's greatest furnace value.

Write for Literature today.

ROYAL JET INC.
ALHAMBRA, CALIFORNIA
Formerly Royal Heaters, Inc.
Manufacturers of a complete line of quality heating equipment.

the editor's notebook

(continued)

company's policies and operations, with results being obtained throughout the industry and with facts regarding the source and nature of the product you sell will permit you to engender confidence. Sound selling is common sense selling. It will create sound customer relations. While we are more interested in where we are going than where we have been, a good record generates optimism."

Objects to Term "Fresh Air"

El Paso, Texas

REFERRING to your article entitled Warm Air Heating Industry Answers a Misinformed Editor, the writer would like to point out that "there just ain't any such animal as fresh air." Just because air comes from out of doors is no indication that it is fit for human consumption. In some localities it is more deleterious than recirculated, treated air. Regardless of its condition, it is "outside" air, not "fresh" air.

Platte Overton
Allison Supply Co., Inc.

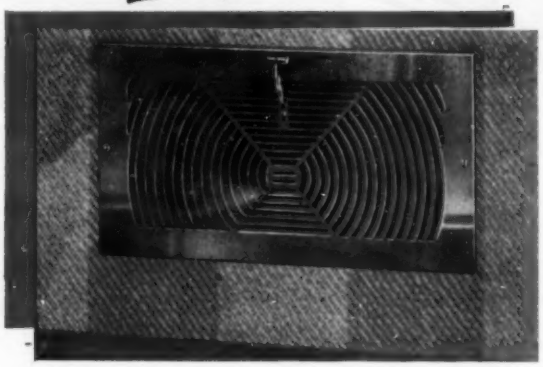
Creative Design Aids Industry

THE POSSIBILITIES for creative mechanical design, a new departure in engineering thought, were considered from the standpoint of both education and industry at the recent annual meeting of The American Society of Mechanical Engineers.

Prof. George B. DuBois of the Department of Machine Design at Cornell University stated that five years' experience with a new course at Cornell, one third of which takes the creative approach against two thirds fundamental design methods, bears out

H&C diffusaires

for LOW-COST, EFFICIENT AIR DISTRIBUTION in PERIMETER HEATING and COOLING



H&C No. 401 is the most practical diffuser on the market. Provides 180° spread of air to blanket the wall of the average room. It's exceptionally low in resistance and has positive means of balancing the system at the register face.

H&C No. 411 is definitely superior to other diffusers in this class. It has opposed louvers for undistorted airflow, regardless of volume; quick, positive volume control for balancing at the face; curved diffusion vanes for ideal air pattern; foot operated, trouble-free valve control.

With H&C DIFFUSAIRES Nos. 401 and 411 you can get down to rock-bottom cost on any job of perimeter heating or cooling . . . and do it without the slightest fear of encountering any dissatisfaction. For thousands of these DIFFUSAIRES have now been used in installations of every type and we have received nothing but the highest praise for their remarkably efficient performance. Each provides an air pattern that completely blankets the outer wall of the average room, providing draft-free heating or cooling, and of course they're built to H&C standards of quality — the highest in the industry. You'll find these H&C DIFFUSAIRES a sound bet in meeting and beating competition and netting more attractive profits.

STOCK UP NOW FOR THOSE SUMMER COOLING JOBS!

Have plenty of them on hand. Indications are that '54 will be the highest "cooling" year in the history of air conditioning.

MEMBER INDOOR COMFORT

HART & COOLEY MANUFACTURING CO.

500 EAST EIGHTH ST., HOLLAND, MICH.

IN CANADA: HART & COOLEY MANUFACTURING CO., FORT ERIE, ONTARIO

PRODUCT OF THE WORLD'S LARGEST and MOST PROGRESSIVE PRODUCERS OF REGISTERS and GRILLES

the editor's notebook

(continued)

his belief that ingenuity can be taught. "The approach to ingenuity is a field almost untouched," he said. "It is like a course in geometry would be with no textbook of accepted theorems." He explained that a set of mimeographed notes is being built up as a text for the course. Students are supplied with illustrated examples of various principles. In their course they are encouraged to refer to these examples to find improvements of their own for designs which are intended to solve the engineering problems presented to them.

At the same session, Maurice Nelles of the Borg-Warner central research laboratory, stated, "Creativeness in engineering is one of the important keys to technical and sociological progress."

Mr. Nelles suggested several steps as an engineer's check list for reaching a valid goal, among them the study of all the needs in connection with the problem and a critical study of existing products or equipment with an eye to how they can be improved.

Sponsors TV Weather Show

THE PHILADELPHIA - Harrisburg branch of the Bryant Air Conditioning Corp. is sponsoring a five minute television weather show on Station WPTZ, Channel 3, Philadelphia. The weather man is seen on a street corner in Philadelphia, exposed to the area's prevailing weather conditions (reproduced in the studio).

Part of the setting resembles a dealer's store, providing the lead-in to the commercials, as the weather man pauses in front of the store window and inspects the products available inside.

The Philadelphia-Harris-

Enthusiastic reception by the public explains the higher sales frequency of the Sundstrand all-electric oil burners.

With a Sundstrand, the most modern concepts of warm air heating are realized.

. . .That's not enough; with a Sundstrand, initial low-cost is matched by long-span oil burner performance.

★DURABILITY
★DEPENDABILITY
★COMPACT DESIGN
★OVERALL ECONOMY
★QUIET OPERATION

. . .These values and the Sundstrand reputation for the finest in oil heating add up to complete customer satisfaction. Foot or bracket mounted, all Sundstrand oil burners are listed as standard by Underwriters' Laboratories . . . and meet all state and local requirements.

A leader in oil heating for 33 years.

write to

SUNDSTRAND ENGINEERING CO.
ROCKFORD, ILLINOIS

the editor's notebook

(continued)

burg branch has been in business for more than 30 years.

Metal Buildings Boon to Sheet Metal Trade

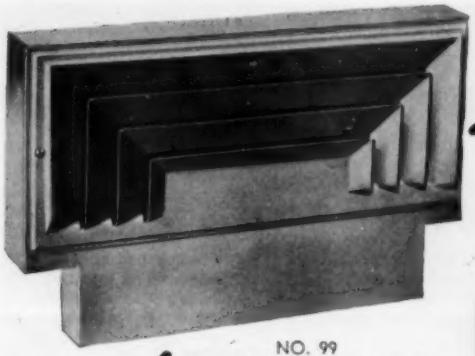
CURTAIN wall construction and its advantages to builders were described recently by the Chicago Tribune. An editorial pointed out the speed with which the lightweight panels could be erected and the additional floor space made available by this form of construction.

According to the Tribune, this type of building means less work for the brick mason and consequently may eventually result in the disappearance of the masonry trade. With jurisdictional awards going to the sheet metal trade for erecting panels on sheathed buildings, the future seemingly holds a brighter picture for the sheet metal trade than it does for the brick mason, according to the editorial.

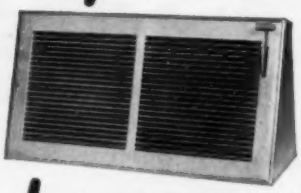
High Job Turnover Laid to Salary, Supervisor

THE MOST important sources of grievance when an employee quits his job are the pay and his supervisor. This was revealed in a survey reported recently in the Journal of Applied Psychology. The survey was based on the results of questionnaires received from "exit interviewers' at 48 companies throughout the nation, which report 5075 quitting cases yearly. The survey returns indicated that almost two out of every five reasons for quitting involved pay. Next in frequency were transportation, promotion, working conditions, poor health, and job security. The researchers also found that the lack of "ability of the supervisor" was a common cause of complaint.

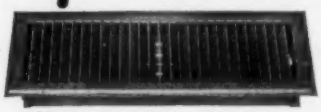
OUTSTANDING



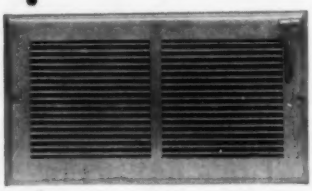
NO. 99
OUT OF WALL PERIMETER
REGISTER



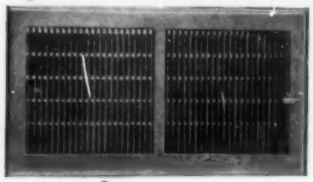
NO. 243 BASEBOARD PROJECTION
REGISTER



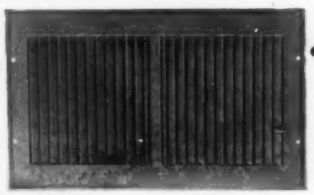
NO. 512 PERIMETER FLOOR
REGISTER



NO. 20 HORIZONTAL FIN SIDEWALL
REGISTER



NO. 30
VERTICAL FIN
SIDEWALL REGISTER



THE
NEW
NO. 305
½ INCH VERTICAL FIN SIDEWALL
MULTIPLE LOUVER REGISTER
FOR COMMERCIAL AIR CONDITIONING

GET IT FROM YOUR JOBBER

MIDCO REGISTERS

Yes, sir, Midco Registers are not just another line, they have unique features that make them tops in the field. Correct in design, simple and efficient in operation, beautiful in appearance—dealers and jobbers all over the country say "OUTSTANDING!"

And for you, *Mr. Installer,* Midco Registers, grilles and floor faces are quality products supplied in a wide variety of styles and sizes. For instance, Nos. 30 and 34 multiple louver registers come in forty-four sizes, from 6 x 4″ to 30 x 10″.

Competitively priced, Midco's popularity grows daily throughout the nation. Installers will be interested in Midco's complete story. Ask your jobber or write to factory today.

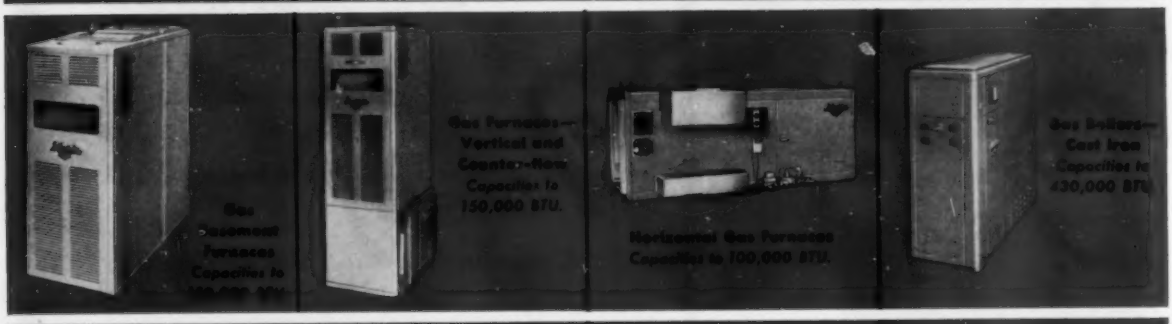
profit makers for jobbers

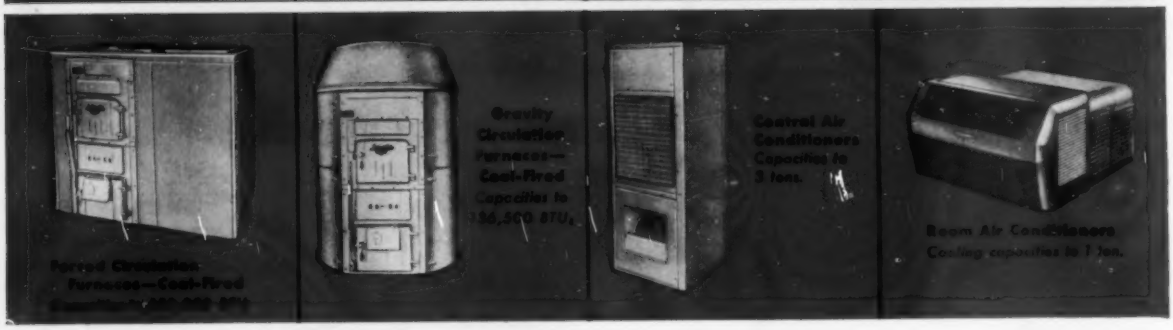
Jobber outlets still available in some areas. Write for catalog and price lists.

MIDCO
REGISTER CORPORATION
1059 GRAND AVENUE • ST. PAUL 5, MINNESOTA

A PRODUCT OF SW STEWART WARNER

WINKLER

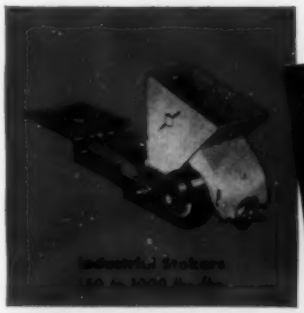


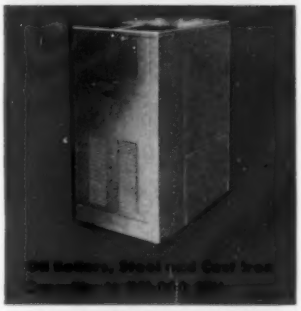


NATIONALLY ADVERTISED

Winkler advertising appears in this comprehensive group of nationally circulated magazines...reaching millions of prospects...pre-selling Winkler Products all over America.

OFFERS MORE FOR '54





NEW OIL AND GAS FURNACES . . . . . .
NEW GAS CONVERSION BURNERS . . . . . .
NEW OIL AND GAS BOILERS . . . . . .
NEW POWER GAS BURNERS . . . . . .
NEW GAS AND ELECTRIC WATER HEATERS
NEW SUMMER AIR CONDITIONING UNITS
. . . ALL ADDING UP TO AMERICA'S MOST COMPLETE LINE OF HOME COMFORT EQUIPMENT!

WHERE CAN YOU MATCH THE SENSATIONAL SEVEN!

In 1953, Winkler dealers set a new high in sales.

In 1954, Winkler dealers are given *seven new and solid supports* to keep the sales curve zooming . . . the hardest-hitting, most comprehensive sales promotion program in Winkler history!

Check the seven business boosters listed below—compare the line of products shown here! *Can you match this set-up anywhere?*

Better join up now—it's going to be a great year for Winkler dealers!

1. **Sensational line of equipment.** Conceded to be America's most complete array of home comfort products.
2. **New stocking plan.** Easy to finance a full stock—no sales lost for lack of equipment.
3. **New warehouse locations.** Strategically located for speedy delivery.
4. **Complete year 'round line.** Offers extra profits to live dealers.
5. **New merchandising tools.** Everything a dealer needs to uncover prospects and get the order!
6. **Bigger national advertising and sales promotion program.** An increased advertising schedule—monthly sales promotion programs—dealer cooperative advertising plan.
7. **Bermuda Cruise.** Winkler dealers—new as well as old—can win this glamorous vacation cruise.

WINKLER TRAINING INSTITUTE

Winkler backs-up this program with a comprehensive Training Course covering every phase of successful selling, installing and servicing of Winkler Products. Free to dealers and their personnel.

Winkler District Sales Managers, located coast to coast, help build your business.

WRITE TODAY!

GET COMPLETE DETAILS OF WINKLER DIRECT FACTORY FRANCHISE

This is your opportunity to join a successful organization with an amazing growth record. Don't delay in getting the facts—a Winkler dealership today offers more than ever before.

STEWART-WARNER CORPORATION

U. S. MACHINE DIVISION • Dept. A-24 • LEBANON, IND.

• AUTOMATIC •
WINKLER
HEATING EQUIPMENT

Martin J. Rosen, right, discusses Zone Control with Honeywell Sales Engineer R. W. Bosworth.

"My best bet for this smart Tri-Level was Honeywell Zone Control"

says heating dealer Martin J. Rosen, Chicago, Illinois

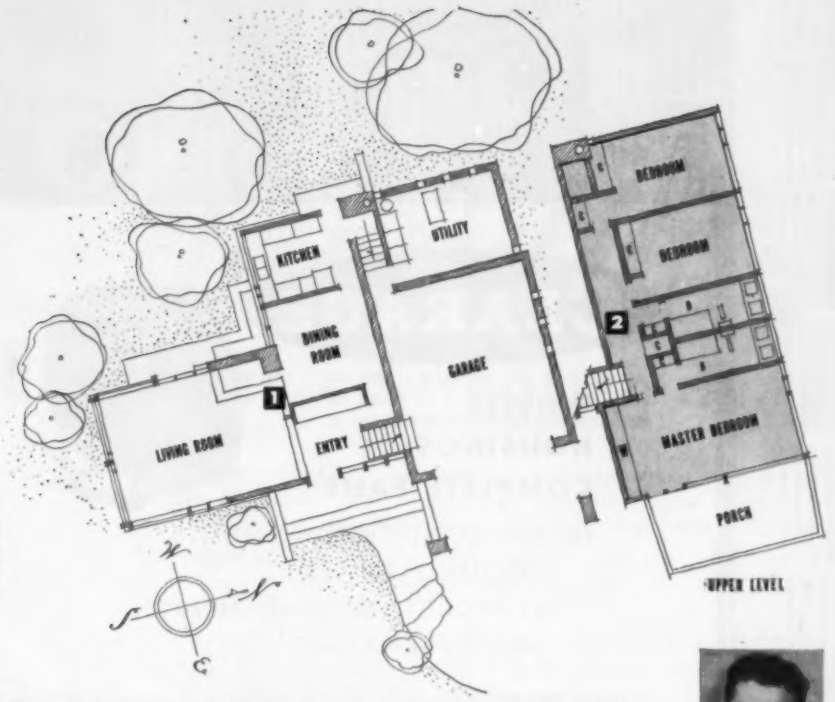
"As soon as I spotted the plans for this smart tri-level home, I knew the owners would want *modern* comfort to go with it. That's why we recommended Honeywell Zone Control.

"Zone Control has proven itself on many jobs for us. We work with a lot of architects in this area, and we've found that there's no home problem too difficult as long as you really *know* Honeywell Zone Control.

"It's an entirely new concept in comfort, *and I mean all over the house.*

"We can handle almost every heating situation with this system, regardless of construction, or conditions such as wind, sun, exposure, glass areas, or zero weather.

"But I guess the thing I like best about Zone Control is that our customers are tickled pink with it. And you know how important that is!"



Floor plan showing zoning of Arthur Pancoe residence in Highland Park, Ill. Designed by Barancik, Conte & Associates, Chicago.

"This house was 'A Natural' for Honeywell Zone Control"

Says Martin J. Rosen

"And after I explained Zone Control to Mr. and Mrs. Pancoe, they readily agreed with me. We divided their house into two zones—one for the living-service area, and one for the sleeping area.

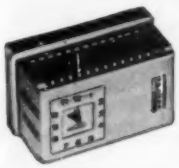
"The living-service area (Zone 1), is located in the middle level of the house and one Honeywell thermostat covers the living room, dining room, and kitchen. This separate thermostat compensates for the warmth from the kitchen and from warm sun through the large living room windows—it gives the Pancoe family comfortable, *even* heat at all times.

"Zone 2 covers the upper level with its large north windows in the bedrooms. The separate thermostat compensates for cold north winds and keeps this area completely comfortable during the day.

"And this thermostat for Zone 2 can be set back to save fuel when the bedrooms aren't in use.

"You can see what a logical sales story you have in Honeywell Zone Control, and you don't mind the extra profits, either!"

Honeywell has controls for any type zone job...



Electronic Chronotherm—famous, fully automatic clock thermostat. Provides night shut-down, automatic morning pick-up for 24-hour control.

Electronic Weathercaster—located outside the house. It senses changes in the weather, and signals the electronic system indoors, automatically.

Modutrol Motor—comes in several versions. It gives fast, accurate control of dampers and valve assemblies, gives you many years of trouble-free service.

For complete information and application data on Honeywell Zone Control, call the Honeywell office nearest you. Or . . . write Honeywell, Dept. AA-2-34, Minneapolis 8, Minn.

MINNEAPOLIS **Honeywell**

104 OFFICES ACROSS THE NATION

H HONEYWELL

First in Controls

CLARAGE

WHEELS
HOUSINGS
COMPLETE FANS

for AIR CONDITIONING UNITS
COOLING TOWERS
EVAPORATIVE CONDENSERS
CIRCULATORS, *etc.*

CLARAGE TYPE DF fan equipment is available in 11 sizes with capacities ranging from 200 to 10,000 cfm. Wheels, housings, or complete units can be furnished.

Here is **rugged** equipment — built of heavier gauge steel than ordinary furnace blowers — for trouble-free operation against higher static pressures. Wheels can be peripherally reinforced for meeting still higher static requirements. Hubs having large flanges which stiffen the wheel centerplate are of cast iron and are available in a wide range of stock bores. Housings are designed and built to assure full rated performance of the wheels.

Wheels and housings can be supplied with hot dipped galvanized construction for protection against moisture. Spark-resistant aluminum wheels also available. In most cases wheels are shipped inside housings to conserve space.

GET THE FACTS

Discover why Clarage is regarded as superior equipment. Request Catalog 603-A or call in the nearest Clarage sales engineer.

CLARAGE FAN COMPANY
Kalamazoo, Mich.

You can Rely on...
CLARAGE
Headquarters for Air Handling and Conditioning Equipment

SALES ENGINEERING OFFICES IN ALL PRINCIPAL CITIES
IN CANADA: Canada Fans, Ltd., 4285 Richelieu St., Montreal

MARTIN NO. — 50

Only Automatic Humidifier's

DRIP FEED GIVES CONTROLLED HUMIDITY

Built-in thermostat drip-feeds measured amounts of water to *sizzling hot* pan. *Each drop vaporizes* as it strikes pan. Gives home measured vaporization, preselected to meet the individual needs of each family.

Thermostat *automatically* shuts water off when heat goes down. This *completely eliminates* the old-fashioned method of reheating a pool of cold water in humidifier.

AUTOMATIC HUMIDIFIERS are noted for their *greater efficiency, better performance, lower cost.* Get facts on the *complete* AUTOMATIC line. Write for new free catalog.

THERMO-DRIP

For installation on straight side bonnet or plenum of any warm air furnace. Fully adjustable. Automatic drip-feed controls vaporization. No stagnant pool to reheat. Valves do not lime up. Outside screw adjuster. Stainless steel pans.

No. 555 VAPORITE

Completely assembled for *lowest cost* installation. *Cuts time and labor costs on every job.* No parts to assemble. No pan leveling or tricky mounting. Just slip the preassembled VAPORITE through single opening cut low in plenum wall. *Drip-feed* controlled by sensitive thermostat puts *right amount of moisture* in the air. Low in first cost, low in installation cost.

No. 500 VAPORITE

For installation on any straight side bonnet or plenum of any gravity or forced warm air furnace. Furnished with *stainless steel* vapor pans which heat *quickly*, evaporate water faster. Pan is easily suspended across plenum chamber. Thermostat assembly may be mounted low in plenum chamber with vapor pan mounted independently on top of combustion dome. Sensitive thermostat controls drip-feed.

No. 577 VAPORITE

Completely assembled for *fast installation.* Adjustable so that it can be mounted on sloping or straight bonnet furnaces. Merely a few turns of the pitch adjusting screw, tips the pan forward or back to level it with plenum. Positively *quickest* and *easiest* installation of humidifier that it is possible to make. No time or labor wasting adjustments. Just cut one hole in plenum wall and slip in the VAPORITE as it is shipped.

AUTOMATIC HUMIDIFIER CO., CEDAR FALLS, IOWA

MARTIN NO. — 30

New Chevrolet Trucks for '54

Loaded with brand-new advantages you need and want!

You'll get more work done in less time and at lower cost with new '54 Chevrolet trucks on the job. They bring you more new features . . . more big new advantages than any other truck on the road.

For example, you get new engine power in all models. The advanced "Thriftmaster 235" engine combines bigger displacement and higher compression with other new features to give you greater power and finer performance. The rugged "Loadmaster 235" engine offers increased strength and stamina for heavier trucking operations. The all-new "Jobmaster 261" engine* brings you extra reserves of high-compression power for hauling big loads on schedule.

In addition, you enjoy new and even greater operating economy. All three 1954 Chevrolet truck engines bring you the full benefit of thrifty high-compression power.

And there are many, many more new things you'll like about these great new Chevrolet trucks. New, roomier pickup and stake bodies let you haul more . . . save you time and extra trips. And they're set lower to the ground for easier loading and unloading. New truck Hydra-Matic transmission* lets you drive all day without shifting. It's offered not only on ½- and ¾-ton Chevrolet trucks, but on 1-ton models, too. New Comfortmaster cab with one-piece curved windshield and amazing new Ride Control Seat* offers the last word in comfort, convenience and safety.

Plan now to see your Chevrolet dealer and get all the facts about the new Chevrolet trucks for '54. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

Most trustworthy trucks on any job!

CHEVROLET

ADVANCE-DESIGN TRUCKS

CHEVROLET ADVANCE-DESIGN TRUCK FEATURES

THREE GREAT ENGINES—The new "Jobmaster 261" engine* for extra heavy hauling. The "Thriftmaster 235" or "Loadmaster 235" for light-, medium- and heavy-duty hauling. **NEW TRUCK HYDRA-MATIC TRANSMISSION***—offered on ½-, ¾- and 1-ton models. Heavy-Duty **SYNCHRO-MESH TRANSMISSION**—for fast, smooth shifting. **DIAPHRAGM SPRING CLUTCH**—improved-action engagement. **HYPOID REAR AXLE**—for longer life on all models. **TORQUE-ACTION BRAKES**—on all wheels on light- and medium-duty models. **TWIN-ACTION REAR WHEEL BRAKES**—on heavy-duty models. **DUAL-SHOE PARKING BRAKE**—greater holding ability on heavy-duty models. **NEW RIDE CONTROL SEAT*** eliminates backrubbing. **NEW, LARGER UNIT-DESIGNED PICKUP AND PLATFORM STAKE BODIES**—give increased load space. **COMFORTMASTER CAB**—offers greater comfort, convenience and safety. **PANORAMIC WINDSHIELD**—for increased driver vision. **WIDE-BASE WHEELS**—for increased tire mileage. **BALL-GEAR STEERING**—easier, safer handling. **ADVANCE-DESIGN STYLING**—rugged, handsome appearance.

**Optional at extra cost. Ride Control Seat is available on all cab models, "Jobmaster 261" engine on 2-ton models; truck Hydra-Matic transmission on ½-, ¾- and 1-ton models.*

MORE CHEVROLET TRUCKS IN USE THAN ANY OTHER MAKE!

New, Attractive Styling

by world-famous industrial designer, Brooks Stevens

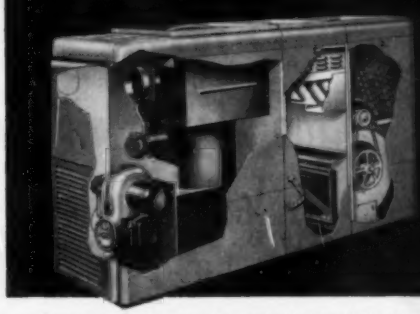
New, Handsome Smooth Finish

in a new color, Mountain Spring Green

NEW, REDESIGNED

Mueller Climatrol

TYPE 116-216 WINTER AIR CONDITIONER • 90,000—110,000—130,000—150,00 Btu input



For complete year-'round Air Conditioning

The cutaway view above shows how the Type 116-216 is designed and styled for cooling. You simply insert the compact, 24-inch square, Type 916 cooling module between the heat exchanger and the blower-filter type.

Or you can install the Type 116-216 with the cooling casing in place. Then later you can add the Mueller Climatrol coils and condenser for a profitable repeat sale. No matter which way you install the Type 116-216 you provide the finest home comfort available.

It's better in appearance, better in performance and a better-than-ever money-maker for you!

Every time you sell a Mueller Climatrol Type 116-216, you and your customer both come out ahead.

Look at it from your prospect's viewpoint

In the Type 116-216, he gets famous Mueller Climatrol Designed Convertibility. He can install the unit for oil now — convert to gas later inexpensively and get the same top efficiency.

And he gets extra value for his heating dollars, with such Mueller Climatrol features as: (1) All-welded, heavy-gauge steel heat-exchanger with free-floating radiator that eliminates expansion and contraction noises. (2) Large blower that is cushioned on rubber for quiet operation.

Look at it from your standpoint

The Type 116-216 gives you extra salability, with the eye-appeal of new, modern styling and a new, handsome finish — the buy-appeal of Designed Convertibility and famous Mueller Climatrol performance.

You cut installation time and increase your profits, because the Type 116-216 is pre-wired and pre-assembled. The unit is shipped in two sections — goes through any ordinary door and down narrow, winding basement stairs without trouble.

The Type 116-216 is one more example of the leadership in design and quality that has made Mueller Climatrol the Big Name in Heating.

Get the facts and figures

Get the complete story on the Mueller Climatrol Type 116-216. Write for facts and figures.

***Available about March 1.*

D-199

97th Anniversary

Mueller Climatrol 2030Y W. Oklahoma Ave. Milwaukee 15, Wisconsin

JOHN WOOD GIVES YOU

MORE

PRODUCTS
PRODUCTION
PROMOTION

to help you make MORE in '54!

NOW— a complete line!

NOW— both galvanized and glass-lined!

NOW— biggest promotion campaign, ever!

NOW— models for every sales situation!

The choice of Mrs. America

JOHN WOOD COMPANY
Conshohocken, Pa.
Chicago, Ill.

ASK YOUR WHOLESALER ABOUT THE JOHN WOOD "more in '54" PROMOTION PACKAGE!

MERION DELUXE • MERION MASTER SERIES

MERION HEAVI-DUTY

MERION DUAL-ACTION

MERION TABLE-TOP

SMCNA Pushes Bid Shopping Legislation

THE DANGER that legislation designed to reduce bid shopping and bid peddling (S-848 and HR-1825) now before Congress may be "buried" because of time pressure was pointed out in a recent news letter from Clarence J. Meyer, chairman of the committee on national affairs, Sheet Metal Contractors' National Association, Inc. To maintain congressional interest in the bills, Mr. Meyer suggested that association members individually and also through local and state associations and chapters make known their interest in this legislation to their senators and congressmen.

Referring to the Proposed Standard of Subcontractor Bidding Procedure advanced by the Associated General Contractors as the answer to the bid shopping problem (copies of which have recently been circulated by AGC's Florida East Coast chapter among Florida subcontractors) Mr. Meyer said:

"Your committee on national affairs believes that AGC's proposed standards fall short of the objectives of S-848 and that the Florida approach is a voluntary one based upon an adherence to an ethical standard. The problem always arises in connection with the enforcement of ethics as to what the enforcing agency is and how strong it is, and whether or not this enforcing agency can be considered as in restraint of trade and hence illegal of itself.

"The opinion of labor relations attorney R. S. Felhaber is that an ethical standard can always be attacked on one or the other of the foregoing and it is more certain — both for enforcement and freedom from any claim of illegality — to have these questions resolved by federal law."

Oil Heating School Opens

A 16 WEEK COURSE on oil heating controls, sponsored by two local Oil Heat Institute chapters, opened February 4 at the Port Jefferson, Long Island, (N. Y.) high school. The school is covering pumps, motors, transformers, electrical controls and control circuits. Included in the course are combustion testing, advanced oil heat training, trouble shooting aided by instruments, vaporizing burner service, warm air layouts for various systems and a special session on warm air trouble shooting.

"OHI's interest in such training programs under local OHI chapter sponsorship," according to F. S. Burroughs of the institute's staff, "is based on the belief that the heating industry can best meet the needs of its customers by providing heating systems efficiently installed and dependably serviced. Proper education of installation and service personnel in professional techniques is the only way to achieve this objective."

Sees Favorable Economic Future

BENJAMIN F. FAIRLESS, chairman of the board, United States Steel Corp., said in his year-end statement that production records set by the steel industry were implemented by many factors during 1953. "Price and wage controls were eliminated," he said, "and the distribution of products, for the most part, returned to the normal channels of free enterprise. The heavy demand for steel during 1953 stemmed, in part, from a backlog of demands left from the year 1952. In addition, defense requirements continued at a high rate, requiring additional millions of tons of steel that might have brought our civilian requirements into more realistic proportions for the year."

He continued, "Today, steel for defense has been significantly cut back. Inventory adjustments are having their effect on current steel shipments. Readjustment is going to mean tougher competition. But after many years of meeting government requirements, I welcome — and I am sure most businessmen do — the return of competition and business practices associated with free enterprise."

Mr. Fairless pointed out that the decline in steel requirements for defense not only will require a readjustment for steel producers, but also will constitute a challenge to those who have been using steel in defense production and who must now intensify sales to existing civilian markets and develop new ones.

"The operating rate of the steel industry," he said, "is one of the measures which economists and business experts watch in appraising the economic future. However, the current slackening in the industry's operating rate may easily be misinterpreted. In recent years, with a few exceptions, due mostly to work stoppages, the steel industry has been operating at near-capacity levels. But it must be stressed that steel plants never were intended or designed to run at 100 per cent of theoretical capacity. The steel industry has had a substantial reserve of capacity for use in times of temporary peak demand or national emergency, and at such times it is able to run at 100 per cent only by resorting to the uneconomic use of marginal facilities, materials and manpower. For this reason, a decline in the high operating rate does not indicate that hard times are ahead for the industry and those who buy its products. Although

WHAT'S HAPPENING —

(*Continued from preceding page*)

the rate of production has declined, I feel that economic conditions throughout the first half of 1954 will be generally favorable."

GOVERNOR HERMAN TALMADGE of Georgia examines an article on the Board of Warm Air Heating Contractors of Georgia, published in a recent issue of American Artisan, while John Mauldin, chairman of the board (*left*), and Laurence F. Kent, board secretary, look on

Governor Praises Georgia Heating Code

JOHN MAULDIN, chairman of the Board of Warm Air Heating Contractors of Georgia, and Laurence F. Kent, secretary of the board, recently presented Governor Herman Talmadge with several copies of the December issue of American Artisan, which carried an account of the advances made under the statewide heating code established in Georgia nearly five years ago.

Governor Talmadge said, "I have been gratified by the definite improvement in the standards of heating equipment installations and by the increased safety factor evident throughout the state under the code. I congratulate the members of the Warm Air Heating Board on the splendid work which has won recognition in a trade publication of such national standing as American Artisan.

"I have followed the earnest campaign of improvement started by the Board of Warm Air Heating Contractors of Georgia early in my administration, and am proud of the effective service it has provided for home owners throughout our state. The Warm Air Heating Code, which became a state law in February, 1949, has served as a pattern for other states interested in better installations of heating equipment and in the reduction of fire hazards."

Cooling Sales Way Up in '53

CLOUD WAMPLER, president of Carrier Corp., stated in a year-end industry review that air conditioning sales registered their greatest expansion to date during 1953. Total retail volume increased to about $1\frac{3}{4}$ billion as compared with $1\frac{1}{4}$ billion in the preceding year. Mr. Wampler said that the 1953 increase was double that shown by the industry in 1952. One of the most significant areas of growth in 1953, he explained, was in year 'round air conditioning for homes. He estimated that sales of central equipment for residences had nearly tripled, with figures indicating a total of approximately 50,000 units sold during 1953. Sales of room air conditioners — of which about 75 per cent are currently going into homes — more than doubled (from 412,000 in 1952 to close to a million in 1953). He also pointed to the trend toward the complete central air conditioning of existing office buildings which became apparent during 1953 in a number of major cities. This was in addition to a continued demand for central systems for new office building construction.

Porcelain Enamel Popular in Building

OVER 200 REPRESENTATIVES of the porcelain enamel industry and others interested in the use of this material in building attended the recent conference co-sponsored by the Building Research Advisory Board and the Porcelain Enamel Institute.

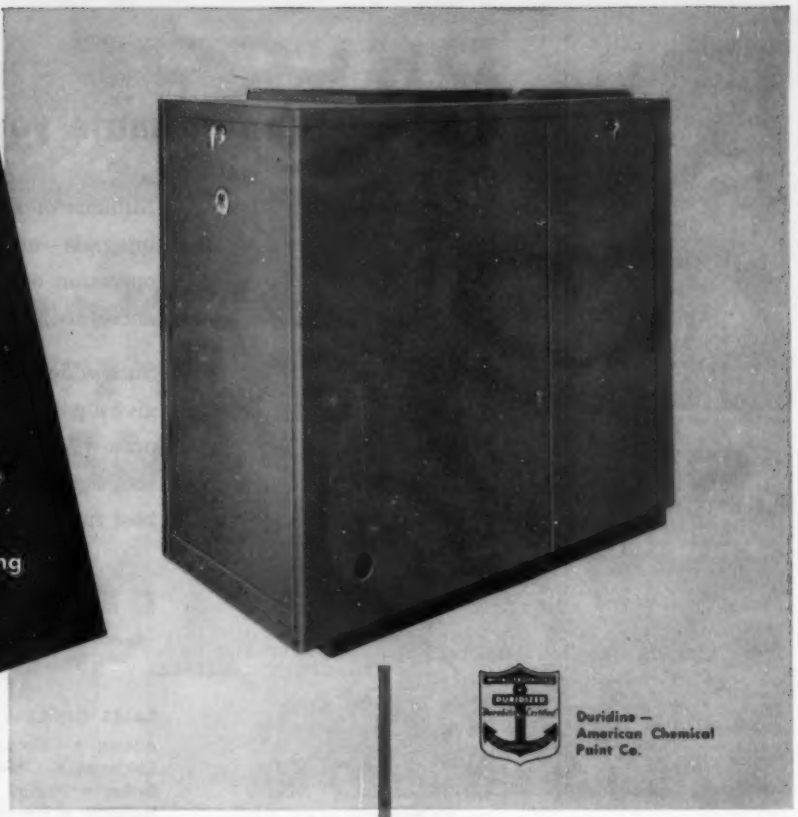
The increasing use of porcelain enamelled metal as a major construction unit for spandrels, copings, facing material and curtain walls was discussed in detail, considerable emphasis being placed on the low upkeep, long life and variety of colors obtainable in this material. Predictions for future uses of porcelain enamel included its application in skyscraper construction where its comparative light weight would be of advantage in reducing the loads placed upon columns and other load bearing parts.

One feature of the meeting was the delivery of a paper on the Radiochemical Decontamination Characteristics of Porcelain Enamel, by Dr. G. W. Parker of the Oak Ridge National Laboratory. The paper, written with the cooperation of G. M. Herbert of the Atomic Energy Commission and Ernest H. Dhein of the U. S. Army Corps of Engineers, suggested many new applications of porcelain enamel such as wall runners, working surfaces, exhaust ducts, and fume hoods. Resistance to contamination, ease of decontamination, and resistance to acids were cited as some of the advantages. Ernest Dhein, talking from the floor in the ensuing open discussion period, indicated further uses on exteriors of buildings and military installations to help reduce the level of contamination in the event of an atomic blast.

The increasing possibilities of the use of this material in connection with laboratories handling isotopes is pointed up by a recent article released by the Associated Press in which Dr. George G. Manov, Director of Industrial Development of the AEC, made the statement that over 1000 industrial plants were at present using isotopes for experimental purposes and tracer techniques.

new winter air conditioner by RICHMOND

Compact Steel Unit in Wide Range of Capacities for Practically any Home-heating Need. Fully Automatic, Gas or Oil.



Now, RICHMOND offers a compact "low-boy" steel furnace — the SH — in five different sizes, for a full range of warm air heating needs.

The RICHMOND SH features a stainless steel, chromium alloy combustion chamber, heavy 12 gauge heating element and unusually large filter area. Operation is fully automatic. All controls are enclosed in the sturdy steel jacket. Casing is Duridized to provide a superior bond for the handsome green enamel finish. Units are equipped with raised steel base which eliminates the need for grouting and permits installation on combustible floor.

Oil-fired types equipped with pressure atomizing burners, U/L listed and complying with commercial standard CS-75. Gas-fired units, A.G.A. approved for use with all types of gases, meet S.U.R. requirements.

You will be surprised at the reasonable cost of the SH model — it's priced right for today's more competitive heating market. Send off the coupon today for full details.

SPECIFICATIONS

Gas-fired	Oil-fired
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SH 20G— 85,000	SH 20P— 80,000
SH 22G—110,000	SH 22P—106,000
SH 24G—140,000	SH 24P—143,000
SH 26G—175,000	SH 26P—175,000
SH 28G—220,000	SH 28P—212,000

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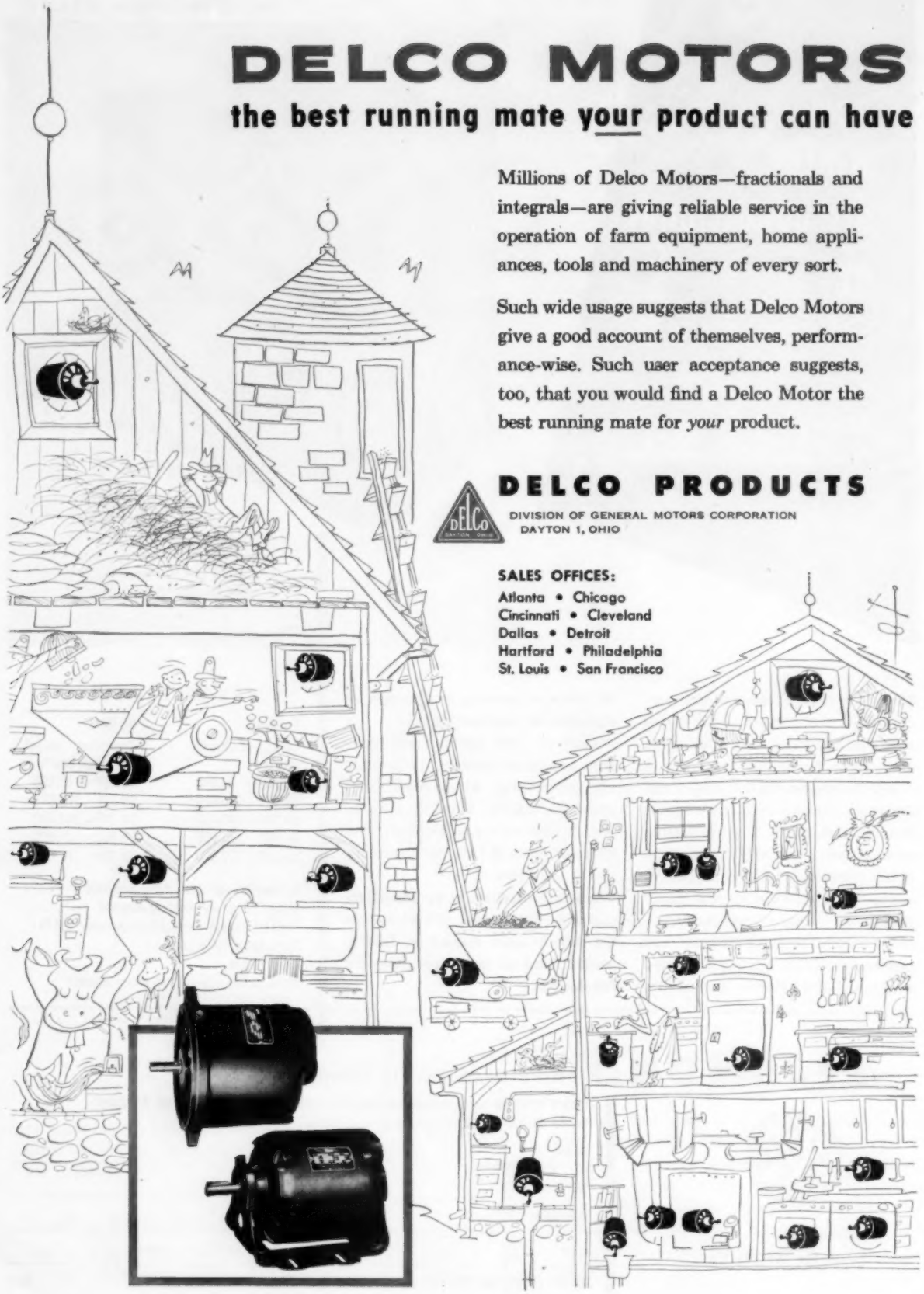

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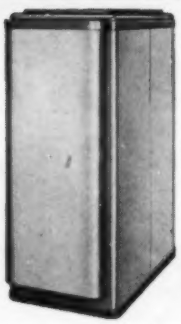

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Washington Letter

Ike Urges More Housing In Two Important Messages

PRESIDENT EISENHOWER has strongly urged more and better housing in two important statements of policy — the State of the Union message and a special housing message delivered on January 25.

In his State of the Union speech, the President suggested to Congress a much greater expenditure of defense funds to build "more adequate living quarters and family housing units" for the kind of trained manpower that has become necessary with the introduction of the highly technical weapons resulting from nuclear power. The Defense Department wishes to build for its professional personnel (those who are permanent members of the Armed Forces) much better types of housing than they have heretofore had, with equipment that will be every bit as good as we find in the average home or apartment for white collar workers in large cities.

The President said: "We should have adequate facilities for the chronically ill, and encourage the construction of diagnostic centers, rehabilitation facilities and nursing homes." He suggests that these programs should spring from the present Hospital Survey and Construction Act, which should be very much widened in order that there may be a far larger number of such facilities provided.

About housing, he said: "The details of a program to enlarge and improve the opportunities for our people to acquire good homes will include: Modernization of the home mortgage insurance programs of the federal government; redirection of the present system of loans and grants-in-aid to cities for slum clearance and redevelopment; extension of the advantages of insured lending to private credit engaged in this task of rehabilitating obsolete neighborhoods; insurance of long term mortgage loans, with small down payments for low income families; and, until alternative programs prove more effective, continuation of the public housing program adopted in the House act of 1949.

"If the individual, the community, the state and federal governments will alike apply themselves, every American family can have a decent home."

Some observers here feel that portions of the State of the Union message were somewhat ambiguously phrased — for instance, the reference to long term mortgage terms, etc. What the President had in mind, it is felt, is a plan which the Housing and Home Finance Agency administrator, Albert M. Cole, had been working on for a considerable time with the President's advisory committee on housing. In effect, the recommendations that came out of this committee formed the particular special suggestions in the special message on housing written by the President.

Housing Insurance for Low Income Families

Probably the most interesting novelty in the message was the suggestion that for an experimental period of two years, the Federal Housing Administration should be authorized to insure 40 year, 100 per cent loans up to $7600 per dwelling unit, or up to $8600 per dwelling unit in high cost areas (as might be determined by the federal housing commissioner). This special mortgage insurance program was proposed as a new Section 221 of the National Housing Act, and is designed to meet the housing requirements of low income families (also as may be determined by the federal housing commissioner).

Purchasers under this program would be required to make a minimum cash payment of $200, which would include amounts to cover settlement costs and initial payments for taxes, hazard insurance and similar prepaid expenses. The Federal Housing Administration would be authorized to issue commitments to builders or owners of rental housing for up to 85 per cent of value, with provision for the conversion of the temporary loan into a permanent loan of up to 100 per cent of value upon sale to qualified owner-occupant purchasers.

Washington Letter

It is expected that with this authority it will be possible for sponsors to construct, purchase or rehabilitate modest houses of the type contemplated in this recommendation, to be rented under a lease-purchase contract to low income families who are not able to qualify under Federal Housing Administration credit standards. The feeling of the government is that such families should be given an opportunity to purchase their homes when their incomes increase sufficiently to enable them to meet normal credit standards.

In the administration of this program, preference will be given to families displaced by public housing, urban redevelopment, or demolition programs. A separate insurance fund will be established for the protection of mortgages insured under Section 221, with a provision that there may be no transfer of assets between this fund and other FHA mortgage insurance funds.

It is reported that this part of the program is the result of considerable interest which was manifested by the National Association of Home Builders and the National Association of Real Estate Boards. Those who devised the plan also suggested that it would be wise to insure mortgages for up to 90 per cent of value and for a term up to 40 years, without limitation as to the economic status of the borrower and with a requirement for monthly maintenance payments equivalent to 10 per cent of debt service to be held in trust by the mortgagor. It was their idea that the estimated total annual housing expense to the home purchaser should not exceed 20 per cent of the mortgagee's annual income. They wanted the Federal National Mortgage Association, or some similar government sponsored group, to be in readiness to purchase mortgages, within appropriate limits, for the purpose of inaugurating and testing the program.

More Public Housing, Federal Loans

In the January 25 message which spelled out his specific housing plans for the nation, President Eisenhower urged Congress to approve 140,000 federally financed public housing units over the next four years, and to authorize federal loans of $700 million and grants of $250 million to cities for renovating and eliminating slum areas.

He also urged increasing the maximum for repair and modernization loans insured by the Federal Housing Administration, suggesting at the same time higher ceilings on FHA insured home mortgages. In addition, the President requested authority to change, in the light of economic conditions, the maximum interest rates and other items involved in housing loans underwritten by the FHA and the Veterans Administration.

He suggested that the Federal National Mortgage Association, a government agency that buys mortgages, be reorganized with a view to its eventual retirement of federal funds from mortgage operations and substitution of private funds for the purpose.

Message Based on Detailed Suggestions

Many of the President's suggestions were based on a variety of detailed recommendations which had been and are still being made to the Administration. Among these was the interesting suggestion that the FHA should do everything in its power to make use of the trade-in house program as a means of increasing both the number and the grade of the existing inventory of housing. It is urged that home owners should be encouraged frequently to trade in the places they own, or in which they own a dominant equity, just as they trade in their old cars for new ones, or for a better car. It is proposed that the down payments connected with such trade-in transactions shall be as low as possible. The philosophy is that the minimum down payments and maximum amortization periods should be made available to both existing and new homes. It is particularly stressed that this practice will put good used housing within the financial reach of more families.

It was urged that Title I of the National Housing Act be amended to permit Class I (a) loans to finance the modernization or repair of existing structures up to a maximum amount of $3000, with a maximum term of five years. The idea is to encourage larger character loans for a longer amortization period to encourage the modernization of a single family home.

It is desired that the insurance of Class I (b) loans for modernization, repair or conversion of residential structures, now authorized under Title I of the National Housing Act, be altered. First, for those structures designed for the use of two to four families, it was recommended that the $10,000 loan limitation be retained but that the maximum term of the loan be increased to 10 years. Second, for the rehabilitation of larger properties, designed to accommodate more than four families, it was recommended that insurance of loans be authorized up to a maximum of $10,000 per structure, or $1500 per unit, whichever is greater, and that the maximum term be 10 years.

There is a strong recommendation that the National Housing Act be amended to permit the Federal Housing

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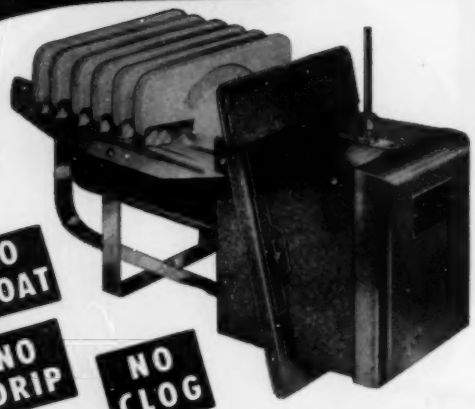

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WASHINGTON LETTER —

Administration to include an open end clause in its insurance contracts. It is noted that there are some legal difficulties, but it is assumed that wherever state laws permit the FHA to function, they should also authorize open end mortgages, provided advances of funds are used exclusively for repairs, improvements, enlargements, modernization or permanent additions to the realty.

It was recommended to Congress that the public housing program should total at least 35,000 new units a year and that the program be organized so that there may be 60,000 applications "in the pipeline" (going through the processing steps). This is designed to assure that most of the 35,000 units which should be authorized will quickly be put into use. It is interesting to note that the experts in the Housing and Home Finance Agency expect at least 25,000 applications to fail to survive.

Urge Mortgage Loan Revisions

The new steps suggested to encourage private building activity include an amendment which will provide the FHA insurance of mortgage loans on one to four family homes of 95 per cent of the first $8000 of the value and 75 per cent of the excess, with an increase in mortgage ceilings to $20,000 for one and two family dwellings, $27,500 for three family dwellings, and $35,000 for four family dwellings. It is urged that all mortgages insured under Section 203 of the National Housing Act be increased in time coverage to 30 years. It is recommended that for multi-family rental housing under Section 207, the upper mortgage limit of $10,000 per unit should be removed and the maximum mortgage should be determined by applying $2000 per room, or 80 per cent of value, whichever is less, with $2400 per room for fire resistant or fireproof elevator structures. For projects having an average of less than four rooms, the $7200 maximum mortgage is to be retained.

Mortgage ceilings for cooperative housing projects under Section 213 of the National Housing Act are urged changed to provide $2250 per room if there are four or more rooms per unit; $2700 per room for fire resistant or fireproof elevator structures; and $8100 per unit for projects averaging less than four rooms per unit — but no amount is to be in excess of 90 per cent of the cost. The adoption of a mandatory builder's warranty in connection with government insured or guaranteed home mortgage financing is recommended.

Legislation also is urged to create a secondary mortgage market facility to be known as the National Mortgage Marketing Corporation. This corporation is to be federally chartered, with an initial stock of $50 million to be subscribed by lenders eligible to use its facilities. At the end of 90 days, the Federal Home

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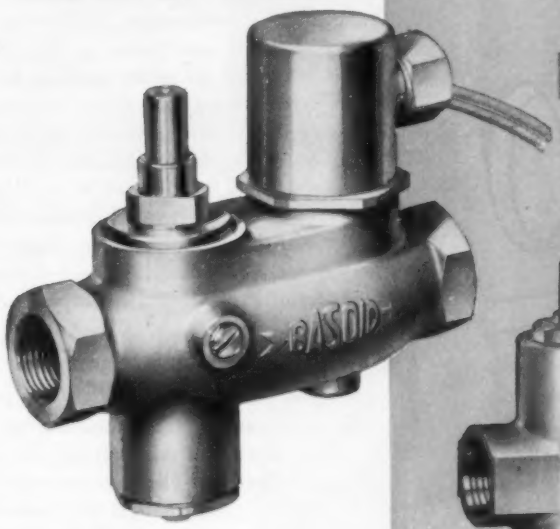
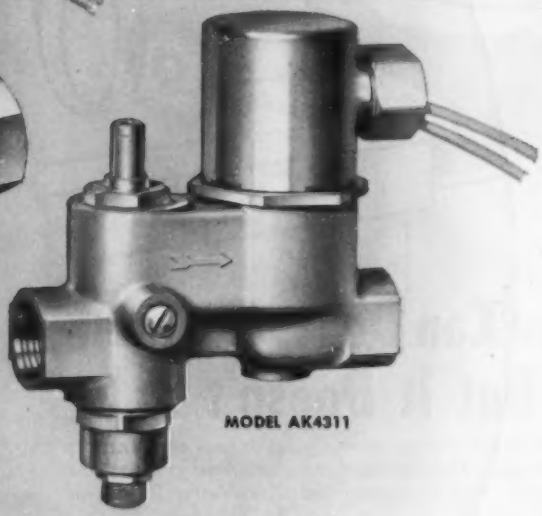


MODEL AH4411



MODEL AK4311

New smaller sizes now are rounding out the famous Baso family. Naturally they have inherited Basoid valve's familiar automatic main gas control with 100% shut-off. Series AK is making its bow in the ½" pipe size with its smaller twin, the ⅜" size, waiting in the wings.

New Series AH is a ¾" valve.

Capacities? The ½" model checks out at 107,000 Btu/hr. at 1" pressure drop with manufactured gas. The ⅜" brother hasn't been burped yet, so we can't be sure. We'll let you know though. Series AH Basoid valves have a capacity of 145,000 Btu/hr. with the same gas and pressure drop.

And how they're built! Stainless steel plunger tube, plunger, and aluminum shading ring and all other metal parts in contact with the gas made of the same corrosion resistant materials. These valves thrive on *all* fuel gases including those with high sulphur content.

Each model is regularly furnished with two pilot tappings, both plugged, or you can have them with only one pilot opening drilled and tapped. You can also have a pressure tapping below the solenoid or a manual control screw in the same place.

Voltage types first offered are 20 volt with transformer or 115V, 60 cycle, AC. If you need 230V, AC, or 440V, AC, you can get them on special order. Like an owl's head, the solenoid hood can be turned to any desired angle.

More to come! Soon we will have the Series AE ready for you bringing all of the same good features in a 1" model.

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WASHINGTON LETTER —

Loan Banks are to subscribe an amount necessary to achieve an aggregate subscription of $50 million. The initial stock would be retired from earnings and from the sale of stock to participating institutions. The corporation would be authorized to issue debentures on the private market and without a governmental guarantee up to 12 times the amount of its stock and surplus, but in no event exceeding the unpaid balance of FHA insured and VA guaranteed mortgages which it holds. It is believed by many that a corporation of this type may be successfully established without government funds and without government guarantees, that it can successfully raise its own funds in the private market, and that it can fulfill an unmet need by facilitating the flow of long term savings into sound programs and areas of the country where such investment funds are not available in adequate supply. It is further recommended that the Home Loan Bank Board be abolished and that a broadly representative five man board be created to supervise the Federal Home Loan Bank System, the Federal Savings and Loan Insurance Corporation and the National Mortgage Marketing Corporation.

Program to Attack Urban Decay

It is stressed that the object of the housing program is also to wipe out existing slums and to check their spread. It is urged that this goal may be reached only by removing houses and clearing areas of cities which are beyond recall. It is thought this method can establish healthy neighborhoods in vast areas which are now blighted or threatened by blight. It is particularly urged that a piecemeal attack on slums simply will not work. The program must attack the entire problem of urban decay. More federal grants and loans to communities are recommended for the clearance of slums and to provide parks, playgrounds, street improvements and other public facilities to maintain healthy neighborhoods.

To encourage high level performance by the communities, it is recommended that a third of federal grants made annually by Congress for better housing be made specially available to those communities with outstanding performance records in attacking urban decay. It is urged the program of subsidized low rent public housing as enacted by Congress in the Housing Act of 1949 be continued with the various recommendations already outlined. Repeatedly it is recommended that low income families displaced by slum clearance, or other public works, be given preference in subsidized public housing. Special emphasis is given to the needs of minority group families. A special fund of $5 million is recommended to be used in testing, developing and reporting slum prevention and slum elimination techniques. It is suggested expenditures may be made on a two-thirds grant basis which should be made available without regard to restrictions imposed on other loan and grant funds.

Air Conditioning without water worries

How about cooling water?

Any builder or architect considering air conditioning for a group of houses must understand the local water problem. Nearly all systems use water to cool the condenser. A 3-ton condenser will use about 360 gals. per hr. Some cities are using so much water for air conditioning that the summer load has doubled in recent years. In most areas where water is short local ordinances forbid wasting water for air conditioning, or if there are no ordinances, the cost of water makes throwing it away prohibitive except for very small systems.

House and Home

Air Conditioning Cited as Danger To Water Supply

The Public Service Commission heard yesterday that widespread use of air conditioning and refrigerating units conceivably could endanger the domestic water supplies of some Arkansas communities.

The information came from witnesses for the General Waterworks Corporation of Pine Bluff.

Suggests Cooling Towers

The Company's engineering staff recommended that users of large air conditioning units be required to install cooling towers for re-use of the water. Engineer E. J. Richardson said a cooling tower would soon pay for itself in reduced water costs and would conserve water.

Little Rock Arkansas Gazette

Pushing the Water Program

The one real controversy has concerned the users of non-conserving air conditioning systems which the council's fire and water committee proposes to settle by compromise. The committee's recommended 16 cents per 100 cubic feet is about double the rate that has been paid by the largest users but far short of the charge recommended by consulting engineers.

The Kansas City Star

Marley Cooling Towers Eliminate Restrictions and Reduce Water Costs

Water shortages the nation over are being publicized more widely every month. Eighty cities have already acted, passing ordinances requiring water reuse, raising water rates or adopting sewer taxes. Another hundred will act in 1954.

Water-wise builders and contractors are assuring their home-buyers economical and continuous air conditioning service by installing the world's most popular water savers, Marley cooling towers. They are the answer to water problems . . . they reduce water usage by 95% . . . there is no worry about high water bills or sewer taxes.

Have you checked your local water situation? Are you offering your customers protection against water shortages; are you providing economical operation? You can do it today . . . see your Marley representative for full information about the simplest, most dependable method of water saving—Marley cooling towers.

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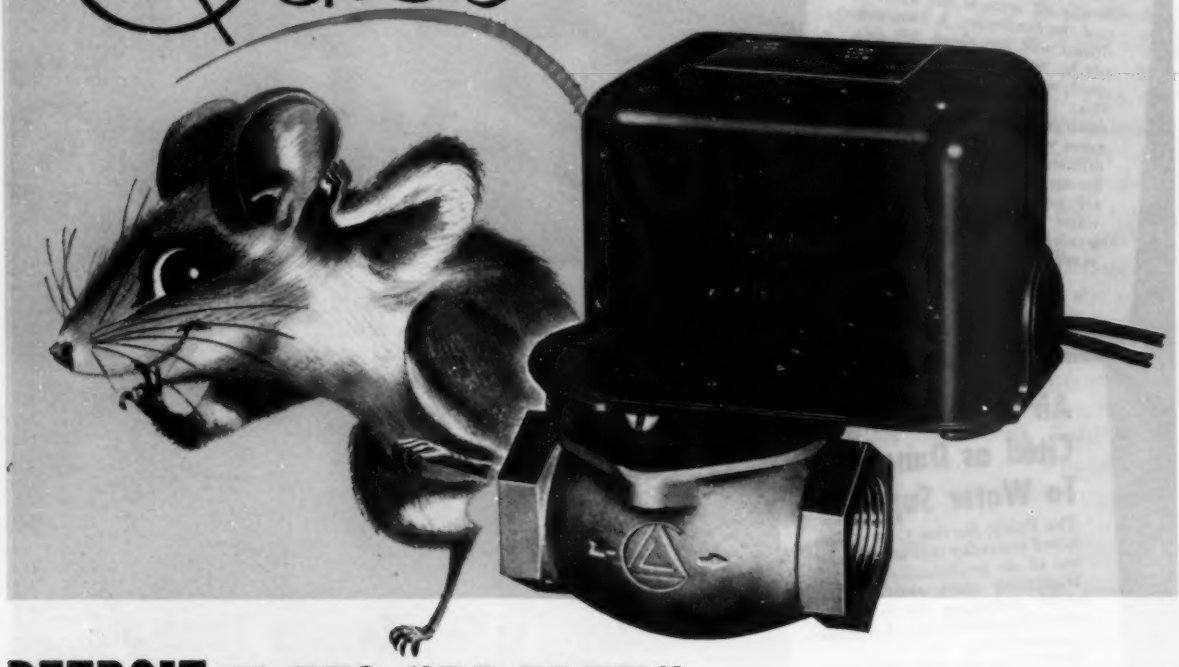

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The Quiet-Acting GAS VALVE—Performance Proven for Reliable Service on Thousands of Installations!

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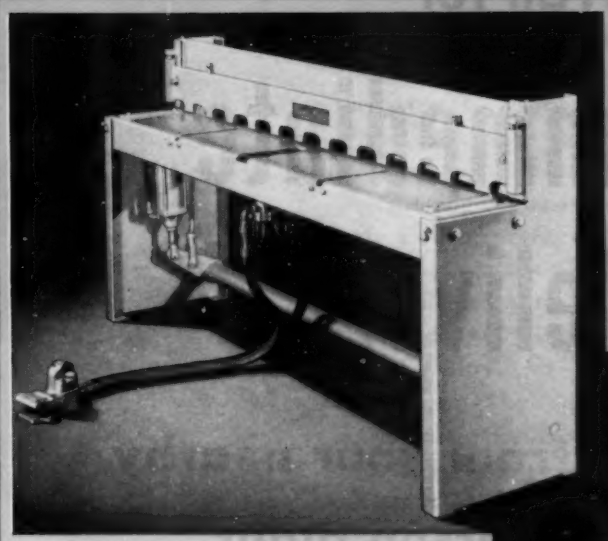

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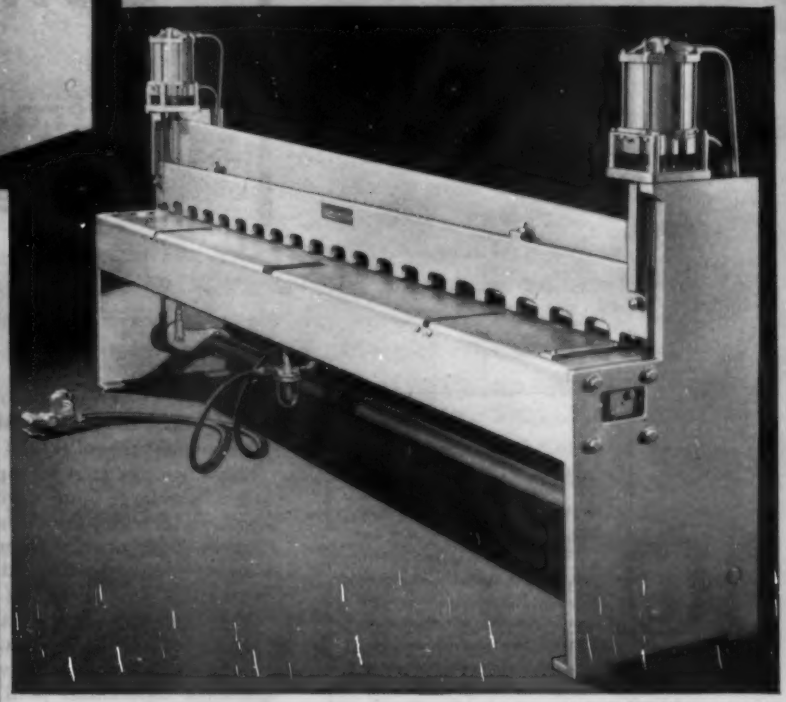

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AMERICAN ARTISAN

The Service Department Can Pay Its Way

NOW THAT the books for 1953 have been closed and the accounts balanced, a study can be made of each department, its operation and its value to the company. Expenses can be analyzed and plans made to help make 1954 a more profitable year than any previous one.

One department that often shows a loss, or — if the heating and air conditioning dealer is more fortunate than many of his fellow dealers — only a slight profit, is the service department. The value of the service department cannot always be estimated in dollars and cents because much good will and many subsequent sales are due to the speed and accuracy of the members of this department.

The service man's contact with the customer is one that should not be allowed to fade into oblivion with the passing of time. A form letter, mailed periodically, will keep the customer reminded of the type of service that he has received and will let him know that you — the dealer — are interested in his problems. These intangible benefits of the service department should be weighed when its cost of operation is being considered.

But, all things considered, there is no reason why a service department should not show a profit at the end of the year. Of course, a plan must be found that will fit the needs of the company and will be conducted by a competent service manager who has been given sufficient authority.

One service plan that has proved successful involves an accurate accounting of all supplies drawn from stock. This prevents the use of a repair part that is not charged for when the bill is mailed on the first of the month. Secondly, it is imperative that a schedule be worked out for each service man that will keep him busy each hour of the day. This, of course, is a difficult task. Due to the nature of service calls, it is particularly hard to estimate the number of calls a man can be expected to handle in a working day. Thus, every effort should be made to keep in close touch with the service man to reduce time lost between calls.

Some companies have succeeded in this endeavor by requiring a service man to call the service dispatcher as soon as he reaches the address and to report by phone as soon as a job is completed. In this way, it is possible also to get in touch with the service man while he is at work making a repair and to direct him to other rush service calls in the immediate area. This feature of making before and after calls to the office requires the cooperation of the home owner, who usually is very willing to allow the use of his phone. However, some service departments have equipped their trucks with radio-telephone service because they believe that if the service man can avoid making special requests of the customer, a better business relationship will result. If all the means at the service manager's disposal are utilized to provide close control, the service department can be making a profit rather than operating as a necessary expense.

TRUCK IS UNLOADED at job site (*left*) as Mr. Ferrara, shop owner (*right*), checks chalk marks indicating the location of each section and take-off

5¼ Hours to Install Warm Air Heating System

Careful engineering and pre-job fabrication and assembly of a variety of parts helps an installation crew of three men do a streamlined, efficient job

WHERE COMPETITION among warm air heating dealers is keen, as in Youngstown, Ohio, it is necessary to reduce operating and installation costs to a minimum to insure a suitable profit for the contractor-dealer. One Youngstown dealer who has developed a procedure that is helping him reduce his overhead is Dan V. Ferrara. Mr. Ferrara has perfected a system based on a high degree of coordination between the members of a four man crew and himself. The key to this system is the careful engineering given each job.

A typical 120,000 Btu job for a new house is allotted labor time in the following manner:

1) Layout on the job — one hour for one man.

2) Roughing in of supply and return register boxes — two hours for one man.

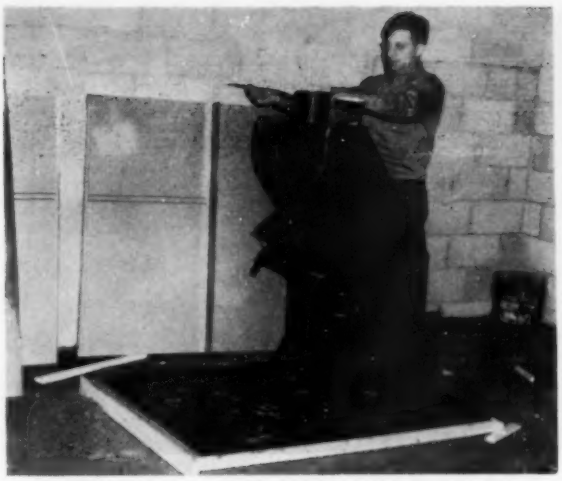
3) Shop fabrication of the entire duct system — 10 hours for one man.

4) Erection of the furnace and duct system — five and one-quarter hours for three men.

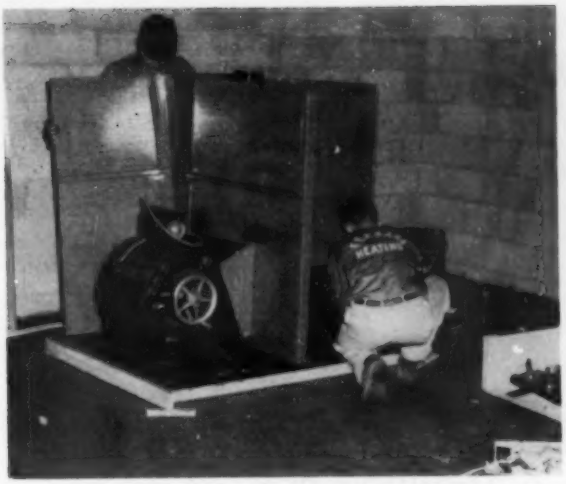
After the agreement has been reached with the builder, Mr. Ferrara and a journeyman sheet metal worker go to the house in which the heating system is to be installed. Mr. Ferrara decides upon the furnace location and marks on the concrete floor, beam or joist (whichever is most convenient) the exact spot where the furnace will be located. Heavy yellow chalk is used for this purpose. From this point all measurements are made and each take-off is indicated at its corresponding location with the yellow chalk.

From Drawing to Pre-Job Assembly

The working drawing of the duct system is made as area sizes and lengths of each section are determined. These sizes are shown beside the diagram, and each take-off is indicated, as is the accompanying reduction in duct size. Each dimension given is to the ¼ in., and where obstructions occur (such as crossing under a beam) a quick check against the overall dimension from

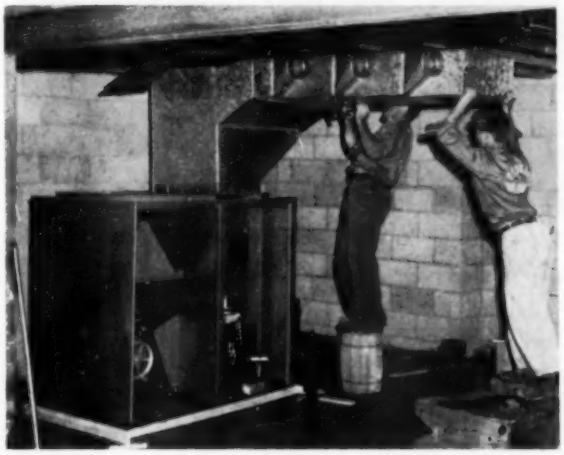


HEAT EXCHANGER is placed on a concrete base and location is checked with original markings made on the layout

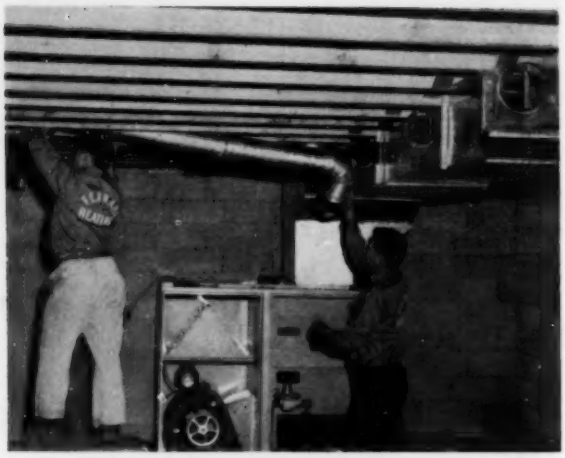


CASING is placed around heat exchanger and blower

PLENUM is trimmed to fit *(left)*. This is the only part that requires trimming on the job. It is set into place *(right)* after the furnace assembly has been completed



FIRST SUPPLY DUCT section is placed *(left)* and sections are measured *(right)* for clearance and alignment



INSTALLATION OF the branch supply ducts is begun

ALL SUPPLY branch ducts have been installed

ROUND DUCT CONNECTIONS are taped and sealed with asbestos paper

SUPPLY AND RETURN trunk lines are completed

the furnace to the obstruction is made to verify that the total of the individual sections equals the length of the overall dimension. Elbows, boot angles, collars and stack lengths are shown on the completed working drawing.

While the dimensions for the duct system are being taken and the instructions for the installing crew marked, the second step of the procedure — the roughing in — is being completed by the sheet metal worker upstairs.

The third step in this streamlined handling of a warm air heating installation is the shop phase of the work. Here the drawing containing the layout and duct dimensions is used to fabricate the individual pieces of duct needed. When all of the duct has been made, the sections are joined together into lengths up to 7 ft long. All take-off fittings are put into place and permanently fastened into the sections. This pre-job assembly aids the installation crew in speeding the job to its conclusion.

The fourth step is where, as Mr. Ferrara puts it, "coordination and teamwork really pay off." First, all materials needed for the job — including sand, cement, furnace, dampers, fittings, tape, duct, grilles and registers —are loaded on the truck so that it is not necessary to lose time by returning to the shop for anything.

Clocking Step 4

The remaining tasks comprising the fourth step are carefully synchronized, as can be seen from the following

JOB AND CLEANUP have been completed. Frank Billinghurst, a member of the three man crew, leaves the job

THE TEAM that did the job — *(l. to r.)* engineer D. V. Ferrara; shop man Howard Huffman; and installers Wendell Pfile, Frank Billinghurst and Edward Meeds

step by step explanation of a sample job in which 12 supply outlets were provided and six return openings were connected to the return duct. (The three man installation crew did not know time was being recorded as each step of the procedure was started and completed, believing the photographer was merely making a visual record of the mechanics of installing a warm air heating system.)

7:40 Loading of the truck starts.

8:10 The truck leaves for the job.

8:30 The truck arrives at the job site; unloading starts. Each major part brought into the building is left near the place where it will be installed. Accessory parts are all placed in one corner of the basement. The unloading requires two men; the third man builds the form for the furnace foundation and mixes the concrete for the base.

8:45 While the heat exchanger is being placed by two men, the third man is assembling the blower, its motor and other parts.

9:00 The heat exchanger is placed and furnace assembly started.

9:20 The furnace casing completes the furnace installation, and burner and controls are now added. While two men are completing the furnace assembly, the third man is covering the joist space for the return air. He completes those nearest the furnace first.

9:40 The supply plenum is placed. This is the only piece of duct that must be trimmed at the job site. This fitting is always made several inches high to allow for the difference in height caused when the base is leveled on the concrete basement floor.

9:48 The first duct section is placed. Each duct section is aligned with a guide line made by snapping a chalk line against the joist. The section is measured for clearance and correct drop from joists.

10:23 The supply duct is completed.

10:28 The men begin to install round branch ducts. Each branch has its own damper installed near the take-off.

11:50 Installation of all supply branch ducts is completed. While two men were working on the supply system, the third man was completing the individual returns.

45 minutes is taken for lunch.

12:35 Remainder of supplies laid out in convenient locations.

12:45 Assembly of the main return duct is started. While two men are assembling this line, the third is taping the joints of the round ductwork, installing registers and connecting the smokepipe to the chimney.

2:15 The return duct is completed and cleanup is started. The cleaning up is a minor job; there is very little left to return to the shop, since the pre-layout engineering accounted for everything that would be needed. The basement floor is swept before the job is considered finished.

2:37 The men leave the job.

Lock Slip Saves Time

Mr. Ferrara feels that much of the speed of assembly can be credited to the double lock slip which he helped develop. This lock slip is made from 26 and 28 gage scrap in various lengths ranging from 8 to 36 in. It is formed in the bar folder from a 3¼ in. wide strip.

All duct ends are formed straight and square at the corners, without corner notching or bending. An offset punch is used for creating the locking lugs that slide into the lock slip and snap tight behind the turned-in lip.

It is Mr. Ferrara's opinion that this type of connection speeds fabrication at the shop as well as making for quicker assembly.

How to Diagnose What's Wrong in an Air Conditioning System

- **Failure of a part?**
- **Improper adjustment?**
- **Poor design?**
- **Poor construction?**

. . . and decide on the best treatment

By S. W. Reid

Air Conditioning Engineer
Gilbert Associates, Inc.

THE MOST successful air conditioning system is one that can provide complete indoor atmospheric comfort for the people occupying the space served by it without their being aware of its existence. Most air conditioning systems fall short of this in some measure as dictated by practical considerations. When a system falls too far short of the optimum, however, complaints arise.

Many of the articles in this series have been written from the designer's point of view. In laying out a system, the designer must answer certain fundamental questions as he proceeds, typical of which might be the following:

1) What constitutes good design practice?
2) What are the principles of good construction?
3) How is a system adjusted properly?
4) What can be done to keep part failures to a minimum?

The questions above are listed in the order in which they are asked as a new job moves through the stages of design, construction, adjustment, and operation.

In this article and the next we plan to use the hindsight of a service man rather than the foresight of a designer. We shall look at a system that is not functioning properly and try to follow a procedure for correcting the difficulties. Because our point of view has been changed, we might find it more convenient to reverse the order of the questions we asked ourselves as designers. Thus, we might ask, "Is the trouble due to 1) failure of a part, 2) improper adjustment, 3) poor construction, or 4) poor design?" Answers to these questions, if sought in the order asked, will take a service man from the least to the most serious problem with regard to the ease with which it can be solved.

Defective Part Found

Suppose we follow the progress of a well trained service man who has been asked to find the trouble with a certain residential air conditioning system. He politely listens to the home owner's story, which, in summary, amounts to the fact that the

system does not provide the comfort that it used to provide when it was new.

Since very little can be found wrong with an air conditioning system when it is not operating, the first step the service man takes is to start the equipment. The home owner demonstrates how he usually does this by closing a conveniently located selector switch. Hearing the blower run and feeling air moving from the registers, he presumes (not being very well informed about the operation of his system) that the cooling unit is also in operation but is doing no cooling. The service man moves the thermostat indicator up and down several times. Hearing no response, he sets the indicator for its lowest position and heads for the equipment room in the basement, leaving the home owner to fathom the mysteries of air conditioning.

In the basement, the service man finds the blower operating and confirms his suspicion that the compressor in the air conditioner has not started. He makes a quick check of the power line to the unit, noting that all switches are closed and no fuses are burned out. Using a small voltmeter he finds that voltage exists between the lines to the unit as they leave the disconnect switch. He then removes a cover panel from the unit and notes a hermetic compressor connected through a magnetic starter which has a manual reset button for the built-in thermal overload relays. When he pushes this button the compressor begins to hum but does not start. Making several other checks of the starting relay, capacitors (this happens to be a motor for single phase current) and motor windings, the service man determines that the starting winding of the compressor is damaged. Classification: defective part.

Whenever a defective part is found, the service man should always try to determine whether or not there are contributing factors. In the example above, for instance, suppose he had found the voltage to be abnormally low. He could piece this evidence together with the fact that the magnetic starter had tripped on overload. He might conclude that the low voltage had prevented the motor from gaining enough speed for the starting relay to open and disconnect the starting winding. A series of false starts might have overheated the starting winding, severely damaging it before the overload relays in the starter tripped. Further checking might reveal that oversized overload elements are in the starter — possibly put there inadvisedly at an earlier date in an attempt to stop nuisance tripouts due to low voltage.

Adjusting splitter dampers for good air distribution to branch ducts is an essential service procedure

Why Do Parts Fail?

The hermetic compressor with its electrical starting equipment is just one of the parts which may fail. Part failures may be caused by three main conditions: 1) Parts defective in manufacture; 2) parts subjected to conditions beyond their rated capacity; and 3) parts which wear out.

Modern factory quality control is a major factor in keeping failures due to defects in manufacture to a minimum. Almost any part of a refrigeration system, however, can find its way into this classification. A big offender is the soldered joint where a leak can develop. Small leaks may not show up during quick factory checks and tests, but their effect becomes noticeable after a unit

Air Conditioning Fundamentals

This is the 17th in a planned series of articles devoted to the fundamentals of air conditioning systems for summer and winter, and providing specific information on all the component parts. Special emphasis is placed on how to adapt cooling to warm air heating systems.

Articles So Far:

1. The terms used in the air conditioning field, i.e., air properties, comfort conditions, etc. (September, 1952 issue).
2. The parts of the refrigeration system and how they work (October, 1952 issue).
3. How to estimate cooling loads (November, 1952 issue).
4. How to achieve proper air stream patterns in the conditioned space (December, 1952 issue).
5. Duct design — comparison between sizing for summer and winter (January, 1953 issue).
6. Condensing units (February issue).
7. Fans, fan motors and fan speeds (March issue).
8. Filters—throwaway, cleanable, electronic (April issue).
9. Condensers and water regulating valves (May issue).
10. Cooling towers and evaporative condensers (June issue).
11. Equipment selection (July issue).
12. Electrical control systems (August issue).
13. Electric controls (September issue).
14. Sample problem — estimating cooling load and selecting equipment (November and December issues).
15. Second sample problem, using different building and conditions (January 1954 issue).
16. Trouble shooting — detecting malfunctioning of cooling equipment (this issue).

Future Articles:

1. More on trouble shooting.
2. Replacement procedures for defective parts in cooling systems (two articles).

has been in service for a period.

Parts which fail because they are subject to conditions beyond their rated capacity are items such as the motor in the hermetic compressor, as described previously. Other electrical components such as relays, solenoid valves, pressure controls, blower motors, magnetic motor starters, etc., may be found in this group. As mentioned, the service man should always try to determine what causes this type of failure, since the mere replacement of the defective part in this case will not be a permanent solution to the problem. The new component will be subject to the same abnormal conditions as was the original part, making its failure only a matter of time.

Parts which fail because they are worn out include such items as bearings, belts, motors, compressors, expansion valves, solenoid valves, and miscellaneous controls. Wear is often aggravated by lack of regular lubrication or cleaning. Clogged filters might also come under this classification. They not only fail to perform properly when they are dirty, but this failure can result in serious consequences affecting the operation of the entire system.

Suppose we return now to the service man. When we left him he had discovered that the home owner's air conditioner has a vital component which has failed. In this case it happens to be the hermetic compressor, but it might have been any other of the various parts mentioned. The point is that the first objective of the service man is to get the refrigeration system in the air conditioner operating properly. In many cases he will find nothing basically wrong, but since the refrigeration system is the heart of the cooling plant, he must check it first.

After the compressor has been replaced, the service man evacuates the system with a small vacuum pump to remove all traces of air which might have entered while the lines were open. He then recharges it with the correct amounts of oil and refrigerant. He puts in a clean air filter, lubricates the blower and blower motor bearings, checks blower belt tension, checks and lubricates the cooling tower and pump as required, then starts the system. A survey shows that all motors, including the new hermetic compressor, are operating. Without actually thinking of it as such, the service man has achieved his first objective and is ready to proceed to the second, the problem of proper adjustment.

When Is Readjustment Needed?

Maladjustment can do more harm to an air conditioning system in the mind of the owner than can an actual breakdown such as the one described. When a part fails, the system will usually not function at all. The service man is called, and the trouble is corrected immediately. When the system is not adjusted properly, however, the owner may be inclined to live with it believing nothing can be done, and gradually building up within himself considerable skepticism about the much advertised comforts it is supposed to provide.

An air conditioning system out of proper adjustment may have one or more of the following characteristics:

1) It may use more power than necessary.
2) It may use more water than necessary.
3) It may circulate more or less air than it should.
4) It may not be operating at full capacity.
5) It may not be providing the correct amount of outside air.
6) It may cool unevenly from room to room.
7) It may not provide enough air motion, or it may cause drafts.
8) It may be noisier than it should be.

Let us lean over the shoulder of the service man as he checks each of these points in order to make sure the system performs up to the maximum of its capabilities. On an actual job some of the adjustments will have to be rechecked as they may be affected by other adjustments. An air conditioning system, when properly adjusted, has all of its components in balance. A major change in any one can affect the relationship of all the others.

The power and water consumption of a given air conditioner are a function mainly of the operating pressures. Therefore, if he can, the service man will attach test gages to the suction and discharge sides of the compressor. If the unit uses water supplied directly, without a cooling tower, he will adjust the water regulating valve until the water leaving the condenser is about 95 F (or whatever temperature from 90 to 100 F has been found economical for his area depending upon the relative costs of power and water). This should result in a discharge pressure corresponding to condensing temperatures between 100 and 110 F. If the discharge pressure balances out much higher than this, the service man will suspect that there is air in the condenser or that the condenser tubes need cleaning. He can readily correct either of these conditions.

If a cooling tower is used, the service man will adjust the flow of water through the condenser so that there is a rise in water temperature of about 10 F. Water leaving the condenser may be about 100 F and discharge pressures will correspond to condensing temperatures between 105 and 115 F. If the discharge pressures are maintained as indicated, power and water consumption for either case will be at the optimum levels.

Controlling Air Quantity

The matter of air quantity is next on the check list. Packaged type air conditioners are usually designed to circulate about 400 cfm per compressor horsepower. The air quantity may be varied from this figure within a reasonable range (perhaps ± 20 per cent) affecting overall cooling capacity roughly 1 per cent for each 5 per cent change in air. A major change in air quantity, however, can cause difficulty. The service man in our example, being aware of this, took the precaution to change the air filter before testing the equipment. Filters, if allowed to become clogged, may reduce air flow to the point where frost and even ice form on the cooling coil. Full air flow is essential to proper functioning. As

the flow is reduced due to accelerated filter clogging, the refrigeration load is diminished, and what air does get through is cooled to a lower and lower temperature. Finally, the coil surface temperature drops below the freezing point. Ice and frost begin to clog the coil and in a short time the air passages are completely blocked.

Just as an air quantity which is too low causes a drop in coil surface temperature (and suction pressure) so can too large a quantity of air cause a rise in the coil surface temperature (and suction pressure). If the air quantity is far in excess of good practice, the coil surface temperature can rise to the point where there will be very little removal of moisture. This, of course, can affect comfort since a reduction in relative humidity is demanded in practically all comfort air conditioning.

If he has any doubt about the air quantity, the service man can check it in several ways. Anemometers or direct reading air velocity meters may be used at supply registers or a pitot tube traverse may be made in the main supply duct. If field checks such as these show quantities within 10 per cent of desired values, they can be considered satisfactory.

Adjusting Coil Feeding Rate

There are many things that can reduce the capacity of a cooling unit. Two of them, high discharge pressure and low air quantities, have just been discussed. A third item is coil feeding. If the feeding rate of refrigerant to the coil is too high, some of it will not evaporate until it reaches the compressor. Since the compressor must pump the vapor from this liquid, which does no useful cooling, the amount of vapor from useful evaporation in the coil which the compressor can handle is reduced. The condition where liquid refrigerant reaches the compressor through the suction is known as liquid "slopover." The service man can detect it in several ways. Liquid evaporating in the compressor will reduce the discharge temperature. Therefore, if the discharge line feels relatively cool (it is normally hotter than one can touch for any length of time) liquid "slopover" should be suspected. Another indication is moisture condensation (sweating) on the casing of the hermetic compressor. A third check method involves strapping a thermometer to the suction line. The temperature should be higher than the temperature corresponding to the suction pressure.

A coil feeding rate which is too low will also reduce capacity since full use is not being made of the coil for evaporating refrigerant. The heat absorbed by evaporating refrigerant is many times the heat absorbed in raising the temperature of vapor. When the feeding rate is too low, the coil is said to be starved. The vapor leaving the coil should be between 5 and 10 F higher than the temperature corresponding to the pressure in the coil. If it is higher than this, the coil is said to be operating at a high "superheat". The only way to check for correct "superheat" is to actually measure temperatures and pressures.

The service man can correct the feeding rate in units with thermal expansion valves by adjusting or replacing the valve. In units with restrictor tubes it is necessary to adjust the volume of refrigerant charge.

The matter of obtaining the desired quantity of outside air deserves some attention. When the air conditioning system is designed, the desired amount of outside air is established and the unit is sized to handle the load imposed on it by the mixture of outside and return air. A system can suffer what appears to be a lack of capacity on peak load days if the quantity of outside air entering is far in excess of the quantity used for design. The use of more warm, humid outside air than is necessary is uneconomical and will limit the air conditioner's ability to maintain desired humidity and temperature levels. The service man should always check and adjust the outside air quantity to be in a reasonable relationship to the total air circulated. For a residence, outside air in the amount of one air change every hour is considered sufficient. Outside air may be measured with an anemometer or direct reading velocity meter at the intake or with a pitot tube in the duct.

Checking the Conditioned Space

Up to this point, the service man has done all his checking and adjusting in the basement where the air conditioner is located. He has replaced a defective part, adjusted the cooling water and the total supply and outside air quantities, and he has checked the cooling coil for proper refrigerant feeding rate. His next job is to check the conditioned space for proper distribution of the conditioned air. He will look for two things — an even temperature from room to room, and proper register deflection to avoid drafts. The exact procedure for doing the balancing depends upon the actual installation. Severe adjustment of the splitters and volume control dampers should not be necessary if the job was properly designed. If it should be necessary, the total supply air quantity should be rechecked as severe adjustment may require a greater static pressure at the fan to overcome added resistances.

Noise in an air conditioning system may be of a mechanical nature, such as a rattle in the blower, duct system, or condensing unit, which is carried through the air stream to the register. This type of noise is easily eliminated. More serious is so called air noise, which results from velocities which are too high. The service man will be able to recommend certain types of acoustical treatment which can effectively lessen this annoyance.

Earlier in this article we listed four basic causes for complaint about an air conditioning system. In our call on the home owner, we found and corrected two of these difficulties. We replaced a defective part and made an overall adjustment of the system. It was assumed that the system was properly designed and constructed. In the next article we shall, among other things, try to point to certain practices which make for inferior design or construction.

TO REPAIR THE ROOF of St. Mark's cathedral in Venice, workmen remove sections of the old lead surface, hammer in new wood supports, install new lead pans, and then put the old lead sections back again

New Roof Keeps "the Old Look"

The author has made several trips to Europe. Here he describes how a cathedral roof in Venice is kept strong and leakproof—but old looking

By Lawrence E. Gichner
Sheet Metal Contractor

THE MOST important thing I learned on my last trip to Venice is the art of making new roofs on old buildings look old. In America, we pride ourselves on our smart looking new buildings, new cars and new clothes. However, in parts of Europe, a youngster may show with pride his leather pants handed down from his father, and perhaps his grandfather. Though a bit patched, they are still presentable and wearable. European guides are always quick to impress upon one the great age of their countries' structures, and unquestionably, these buildings look their part. Therefore, a shiny new roof on an old landmark not only would spoil its appearance from an aesthetic point of view, but also would look most incongruous in the age-worn surroundings.

But what happens when the roof leaks and a new one is needed? I discovered the answer in Venice.

At two o'clock each day on the Piazza, two huge bronze figures atop the clock tower swing their mallets, hammering out the hour on a large gong. This is the signal for thousands of pigeons to fill the air and swoop down on St. Mark's square to lunch on feed provided by the municipality. While snapping a picture of this sky-darkening mass, I saw in the background, through the fluttering maze of birds, a scaffolding on the dome of the renowned St. Mark's cathedral on which men were working repairing the roof.

I dashed for the building and was off on an adventure of exploration. I found many attendants in the magnificent gold and mosaic church, but none who understood English. With gesticulations I pointed to the roof, and finally an attendant with what I assume to be the finest mustache in all Italy led me through the cellar to a long flight of stairs that went to the roof.

Once on the roof, I headed for the scaffolding. The mechanics, of course, were surprised to see a stranger with a large photographer's bag climbing up the ladder to

them. By pointing to myself, to the west, to them, and to myself again, I tried to convey the idea that I was from America and akin to them through our work. They understood not a word of English. I understood not a single word of Italian. But I believe I got the idea across, for they posed at their job while I began taking photos.

New Roofs Under Old

As they worked, an amazing transformation was taking place. Each of these mechanics was a combination of carpenter, metal worker, and roofer, all in one. The underlying wood structure of the roof was in a weakened and pulverized state, its advanced age having brought on dry rot. Pieces of removed timber readily shredded in my hands under the slightest pressure.

These mechanics first carefully removed the old sheets of lead, approximately 3 ft × 3 ft in size, that had done centuries of service and laid them cautiously aside on their scaffolding. Next they replaced the old lumber with new and heavily creosoted the new lumber with a paint brush. They then installed a complete new roof of lead pans with copper cleats and copper nails between batten strips. After the new roof had been completed, they put the old lead sheets back over the new ones.

Viewing the roof from any angle, above or below, no general observer could ever tell that a new roof existed under the old one. No new metal showed anywhere to distract from the ancient splendor of this rich, beautiful, architectural gem. Thus, I learned the secret of how Europe keeps her old roofs looking old.

FIRST STEP: The old lead squares are removed and placed carefully on the scaffolding . . .

REVEALING THE OLD wooden substructure which shreds at the slightest pressure of the hand

SECOND STEP: New wooden substructure is hammered in . . .

AND THEN heavily creosoted

THIRD STEP: New lead pans are installed using copper cleats and copper nails (pointed out by workman) between batten strips

FINAL STEP: Old lead squares are replaced, and scaffolding, which is curved to fit the roof, is moved to a new section

Heated Slab, Baseboard Registers Maintain Low Temperature Differentials

. . . from floor to 5 ft levels. Heat from the floor counteracted descending cool air currents; and outlets with deflecting vanes, inclined faces, etc., were found to give excellent results

By S. Konzo
University of Illinois

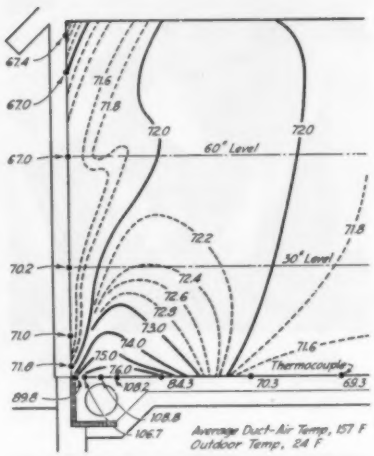
THE SUCCESS of warm air perimeter heating systems can be largely attributed to the fact that the cool air falling from cold wall and window surfaces is counteracted by rising currents of warm air. In the course of the experiments in the Floor Slab Laboratory and in the Research Residences at the University of Illinois, it was also found that the temperature distribution of the air in the living zone was affected by the manner in which the warm air was introduced into the room through the registers. In this article a short summary will be given of:

1) The pattern of air temperatures near the exposed wall resulting from the rising air currents from the heated floor surface.

2) The effect of a few different types of registers on the temperature distribution in the room, as observed in the Floor Slab Laboratory.

In Research Residence No. 1, in which conventional warm air heating systems had been investigated, it had been found that storm windows were effective in reducing the downward draft of cold air usually present with unprotected windows. In the case of double hung wood sash, the current of air coming down over the windows and pouring over the window sill was about 3 F higher for the windows protected with storm sash than it was for those not so equipped. The effect of this increase in temperature of the downward current of air was to increase the air temperature in the living zone of the room, particularly near the floor. The temperatures in the upper parts of the room were not affected to any extent.

[Parts of this article are abstracted from the complete report, Heat Emission Characteristics of Warm Air Perimeter Heating Ducts, by J. R. Jamieson, R. W. Roose, H. T. Gilkey, and S. Konzo, University of Illinois Engineering Experiment Station Bulletin 412. Figs. 1, 2, and 4 are reproduced from this bulletin.]



1 AIR TEMPERATURE profiles for a room without windows show that temperatures increase progressively toward the portion of the floor near the outer wall when the room is being heated almost entirely by panel heating effect from the floor surface

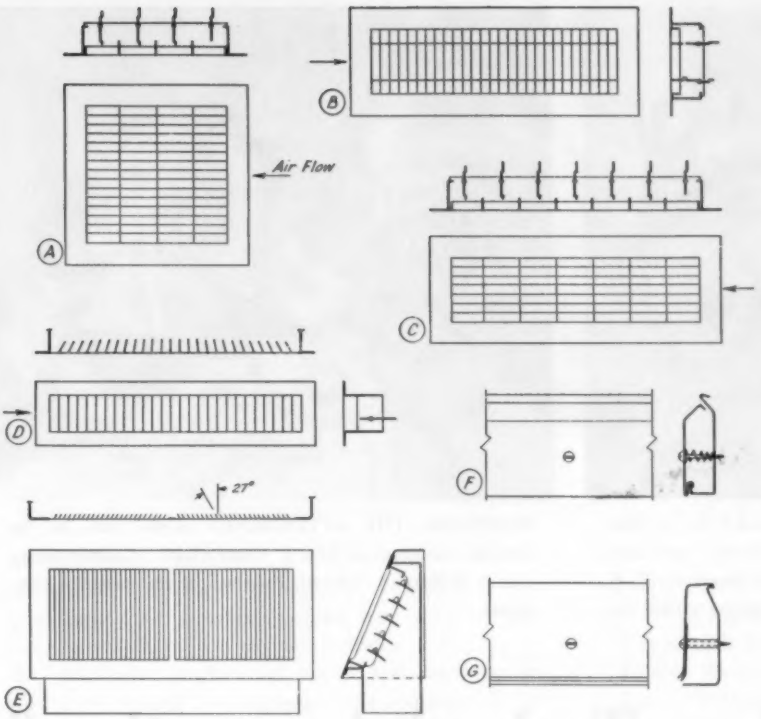
Warm Floor Affects Patterns

With warm air perimeter heating, in which heat ducts were embedded in the floor slabs, it was considered desirable to study the air temperature patterns of the room to see what influence the heated floor surface would have. For this purpose, a large number of temperature readings was made in one of the test rooms in the Floor Slab Laboratory, and constant temperature lines were drawn to show the temperature patterns. The air temperature profiles shown in Fig. 1 were for a room without windows. The following observations were of special interest:

1) A mass of cool air exists at the outer wall near the ceiling. The temperatures were about 67 F for an outdoor air temperature of 24 F. This area was not in the zone of occupancy.

2) As the cool air moved downward it was tempered by the rising warm air currents from the heated floor slab. Note that the air temperatures increased progressively as one approached the floor near the outer wall.

3) In the center of the room the room air temperatures were much more uniform, with a temperature difference from floor to ceiling level of less than 0.5 F.



Register	Type	Nominal Size, In.	Number of Valves	Core Width	Core Height	Fret Width	Fret Height	Free Area at Face, In.²
A	Floor	8 x 8	4	7.44	7.50	0.06	0.50	48.4
B	Floor	4 x 14	2	13.44	3.50	0.06	0.50	39.1
C	Floor	4 x 14	7	13.44	3.44	0.06	0.50	40.0
D	Floor	2 x 14	1	13.75	2.00	0.06	0.75	23.7
E	Baseboard	14 x 6	5	13.44	5.31	0.05	0.25	59.7
F	Baseboard	Continuous adjustable slot at top						6.0*
G	Baseboard	Continuous adjustable slot at bottom						4.5†

* Maximum free area: 10.8 sq in. per lin ft of register.
† Maximum free area: 4.8 sq in. per lin ft of register.

2 SEVEN TYPES of registers were investigated, the room air temperatures being measured at the same outdoor air temperature and register air temperature for each one

4) As might be expected, the air temperatures immediately above the perimeter duct were higher than those in any other part of the room, and were observed as 76.0 F when the maximum floor surface temperature was 108.8 F. Obviously, with air temperatures of the circulating air less than 157 F used in this experiment, the air temperature profiles would not show as much change from point to point in the room.

Window Area a Factor

5) When windows were installed having areas equal to 10, 20, and 30 per cent of the floor area, the temperature difference between floor level and 30 in. level in the center of the room increased slightly. For example, in the room having a window area equal to 20 per cent of the floor area, the temperature differential between the floor level and the 30 in. level was 1.4 F.

On the other hand, the temperature difference between the 30 in. level and the ceiling level was only 0.3 F when no windows were used and only 0.6 F with the windows in place. The difference was not significant.

In other words, the rising air currents from the panel heated floor counteracted the descending air currents from cool wall and window surfaces.

6) Floor surfaces at a distance of 6 ft from the exposed wall were not affected much by the presence of windows. At a distance of 4 ft from the exposed walls, the floor surface

(*Please turn to page 74*)

How We Got Where We Are In

WARM AIR PERIMETER HEATING

the *14th* in a series planned to tell about:

- **Investigations in the Research Residences at the University of Illinois**
- **Design and installation data (condensed from manuals published by the National Warm Air Heating and Air Conditioning Association)**
- **Specific phases of warm air heating**

. . . in articles so far:

- **heating basementless homes**
- **warm air ceiling panels**
- **heating slab floor homes with ceiling and floor panel systems**
- **floor panel-convection heating for slab floor homes — partially open and completely open**
- **survey of field practices**
- **new research residence built**
- **comparison of two loop perimeter and three convection systems**
- **comparison of perimeter loop and two loop system**
- **loop vs. radial system**
- **perimeter laboratory studies (three articles)**

NEWLY ELECTED OFFICERS are (*seated l. to r.*) Clarence J. Meyer, secretary; Richard W. Friday, president; (*standing l. to r.*) William C. Kirkpatrick, treasurer; F. V. Pils, first vice president; and Irving G. Spalty, second vice president

RECEIVING THE ATTENDANCE trophy won by the Buffalo contingent is John J. Yager (*left*). Congratulating him is William J. Schmitt, chairman of the reception committee

"We Need More Trained Apprentices"

. . . New York State sheet metal, roofing and air conditioning men told at convention. Also spotlighted: Jurisdictional disputes, new materials and methods for roofing, and merchandising

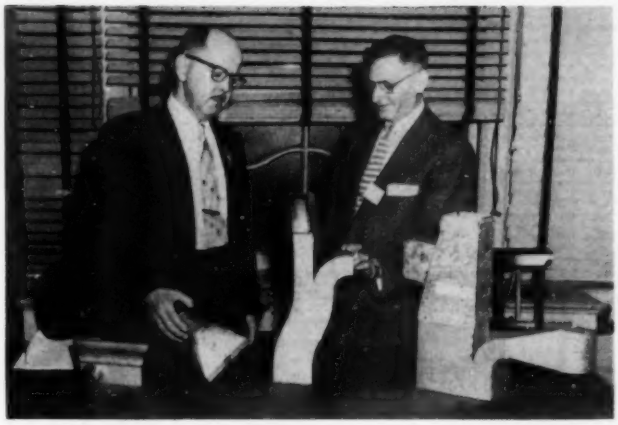
MEMBERS OF the New York State Sheet Metal, Roofing & Air Conditioning Contractors' Association believe that "There's *success* in numbers." They can, they feel, successfully solve the problems of their industry if as many members as possible get together at their annual conventions to hear the latest information and see the latest techniques available. One way to encourage attendance is to give an annual trophy to the city with the largest turnout. (The host city is not eligible.) This year the trophy, won by Buffalo, was awarded to John J. Yager, president of the local sheet metal contractors' association. The host city for this year's (31st) annual convention, held January 17 to 20, was Rochester.

Among the many activities of the convention was the election of officers for 1954. They are Richard W. Friday, Rochester, president; F. V. Pils, Lockport, first vice president; Irving G. Spalty, Rochester, second vice president; Clarence J. Meyer, Buffalo, executive secretary; and William C. Kirkpatrick, Buffalo, treasurer. Directors elected for a three year term ending 1957 are Charles Buri, Lockport; William C. Schmitt, Jr., Rochester; and Peter Sturr, Utica. Also elected was George Ballard, Jr., to serve as a director for two years, replacing Irving G. Spalty.

The Merchandisers' Auxiliary of the contractors' association elected Edwin G. Ireland, Syracuse, president; John O'Donnell, Buffalo, first vice president; John P. Cullin, Syracuse, second vice president; R. W. Mackey, Jr., Syracuse, third vice president; C. E. Sperlik, Rome, secretary; R. C. Baynes, Rome, treasurer; and G. M. Miller, Syracuse, sergeant-at-arms. Directors are F. O. Carfer, Buffalo; David Levow, New York City; A. A. Stagg, Albany; J. W. Stoner, Buffalo; and J. W. Thompson, Buffalo.

Wanted — Apprentice Program to Meet Needs

"A training program that will assure a continuous supply of highly skilled sheet metal journeymen is needed now more than at any time during the past 12 years," said Joseph R. Stiglmeier, chairman of the apprentice training committee, reporting on the current apprentice program. "Based upon an annual attrition rate of 2 per cent due to death and retirement of journeymen sheet metal workers in New York State, we need about 1500



WINNING APPRENTICE PROJECTS are examined by Harry C. Gilbert (*left*), retiring president, and Joseph R. Stiglmeier, chairman of the apprentice training committee

FILM ON THE INSTALLATION of copper gutters is discussed by (*l. to r.*) George Ballard, C. E. Sperlik, R. C. Baynes and L. W. Childs

apprentices in training continuously. There are now approximately 900 in training which means we are producing only 240 new journeymen annually."

Mr. Stiglmeier pointed out that a training program which goes beyond the necessary requirements of apprentice training is most appropriate at this time because new machines have been developed to aid the journeyman in producing better products and new techniques put into practice in the past few years have "lowered the effectiveness of older journeymen."

The present skill of the journeyman is limited, he said, due to the situation that developed during World War II when apprentices were obtained in small numbers and spent their apprentice training period performing specialized work. It is desirable for sheet metal contractors and those representing labor, Mr. Stiglmeier continued, to prepare an intensive training program that will assure the same extensive degree of skill from today's journeyman as was recognized when the labor and business markets were on "a more stable basis than has been possible within the last 12 years." Speaking on the national apprentice situation, Mr. Stiglmeier said that in 1951 there were 6900 apprentices when at least 10,000 were needed. This is based upon the accepted ratio of one apprentice for each four journeymen active in the construction industry, there being approximately 40,000 sheet metal journeymen on a national basis. There are 350 local unions in the sheet metal construction industry and of this number there are 225 that are cooperating with employers in a joint apprenticeship training program. If more of these programs could be developed, there would be a better chance to have the number of apprentices desired in training, he pointed out.

One of the activities of the New York State Sheet Metal, Roofing & Air Conditioning Contractors' Association apprenticeship committee is an annual apprentice contest. Cash awards are given to the apprentice winning first prize in each of the four classes of competition (classes being based upon the length of training received). Those who competed in the 1953 contest and won prizes for their entries are:

Raymond Torge, Buffalo — 4th year award
Donald Wagner, Buffalo — 3rd year award
Joseph Williams, Syracuse — 2nd year award
Ronald Schueller, Albany — 1st year award
Richard Voellinger, Rochester — Best soldering

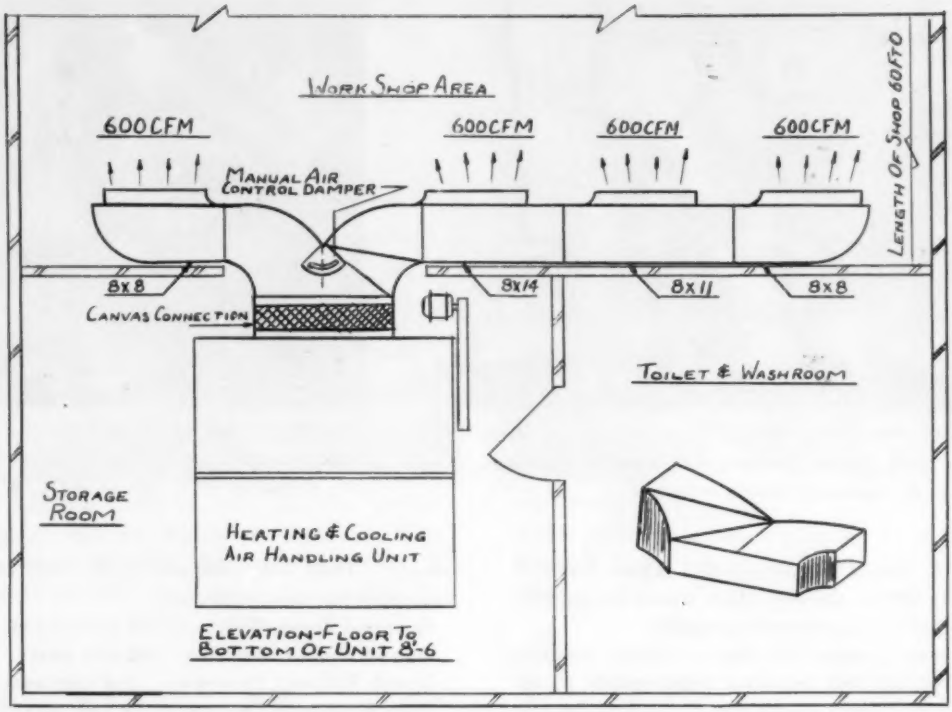
Sheet Metal Man — a Prime Contractor

Joseph D. Wilder, executive secretary, Sheet Metal Contractors' National Association, reported that a recent decision by the National Joint Board for Settlement of Jurisdictional Disputes has awarded the erection of steel roof decking to the sheet metal trade. He suggested that sheet metal contractors bid on all jobs in their areas that fall within the jurisdiction of the sheet metal industry. If their bids are accepted, he pointed out, they then can award part of the contract to the trade most suited to perform the skills required. If there is a dispute between any two union groups on who is to do the actual work, the dispute can be turned over to the National Joint Board for Settlement of Jurisdictional Disputes for a decision. The advantage to the sheet metal contractor is that he will be in the position of prime contractor for that part of the work that falls within his field.

The National Joint Board for Settlement of Jurisdictional Disputes consists of men from both labor and industry, and one Sheet Metal Contractors' National Association member, Paul Stromberg, Washington, D. C., spends two days a week sitting with the board helping it to reach decisions that will play an important part in the continued growth of the sheet metal industry. Mr. Sromberg works without compensation as do all other members of the board.

Mr. Wilder also gave the contractors an idea of how the money paid into welfare benefit funds was being distributed. He compared the various rates being paid nationally. The national average for welfare benefits is

(*Please turn to page* 78)



1 SINCE THE SUMMER-WINTER conditioning unit in this installation is located overhead, in an off-center position, the duct system calls for a fitting such as the one described. Pictorial view of the fitting is shown at lower right.

HUGH REID'S SHEET METAL PATTERN

Making a Double Elbow with Different Size Branch Ducts

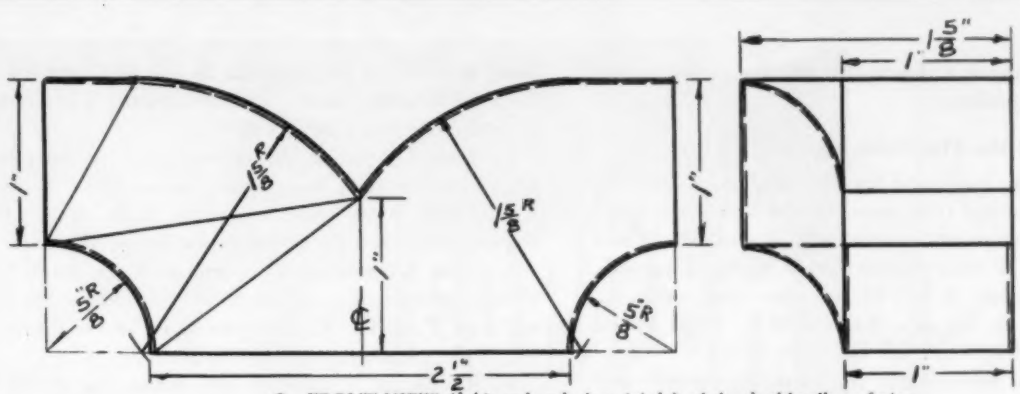
IN FIG. 1 is shown one of the many practical applications of the rectangular double elbow with different size branch ducts. For the installation shown, it was decided that a suitable location for the summer-winter conditioning unit would be overhead in the storage room. In this off-center position it was necessary to design a system with different size ducts going in opposite directions so that a satisfactory air distribution would be attained.

The general design procedure is to determine a grille velocity that will give an air throw equal to three-quarters the distance from the outlet to the opposite wall; this engineering data can be obtained from any of the air diffuser manufacturers' catalogs.

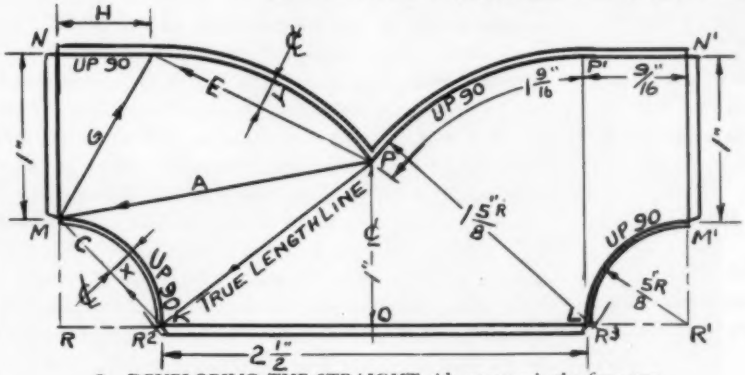
Note that Fig. 1 gives a building length of 60 ft. The grille outlet throw, therefore, should be 45 ft to insure a good mixing of primary and room air.

In cooling, too short an air throw will result in cold drafts at floor level; in heating, an insufficient throw will cause high temperature air to stratify under the ceiling and a large temperature gradient from floor to ceiling.

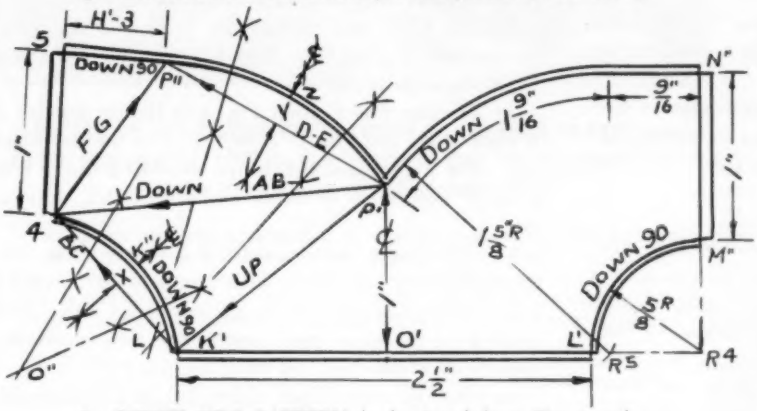
Directional grilles have been designed to provide complete control of air stream direction. The air vanes can be adjusted for whatever air pattern is necessary.



2 FRONT VIEW (*left*) and end view (*right*) of the double elbow fitting

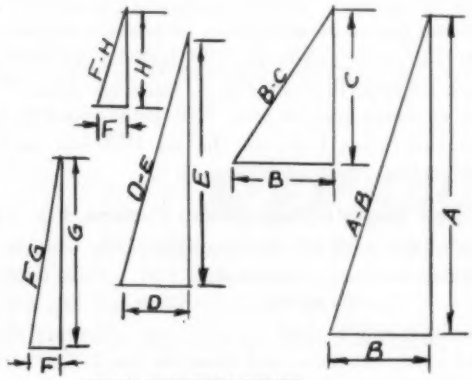


3 DEVELOPING THE STRAIGHT side pattern is the first step

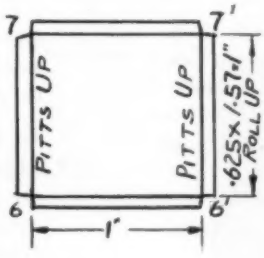


6 OFFSET SIDE PATTERN is developed from Fig. 3 and the true length lines

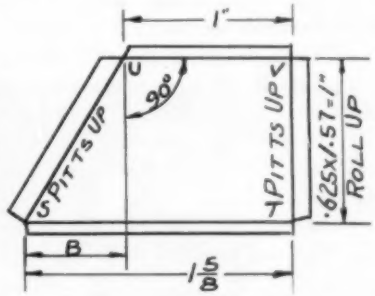
5 BACK PATTERN utilizes arc and line lengths from the flat side



TRUE LENGTH LINES



7 STRAIGHT SIDE throat pattern



4 OFFSET THROAT PATTERN

The following is a step-by-step solution to the pattern development problem:

To Lay Out the Flat Side, Fig. 3:

a) Draw the horizontal line K-L, 2½ in. Extend the horizontal line and from points K and L measure ⅝ in. and mark the points, respectively, R and R′. From points R and R′ draw vertical lines at 90 deg to line K-L.

b) With points R and R′ as centers and radius ⅝ in., draw the 90 deg arcs M-K and M′-L. From M and M′, measure 1 in. and mark the points N and N′.

c) From K measure 1¼ in., mark the point O and from this point draw a line perpendicular to line K-L. Mark the line CL. From O measure 1 in. along line CL and mark the point P.

d) Set a compass at distance R-N, which is 1⅝ in. and with P as center draw arcs to intersect line R-R′ at points R^2 and R^3 and with these points as centers and radius R^2-P draw arcs. From points N and N′ draw lines tangent to the arcs.

e) Draw work lines P-K, A, C, E, G, H, X, and Y.

To Lay Out Offset Throat Pattern, Fig. 4:

a) To calculate the length of the ⅝ in. throat arc K-M (Fig. 3), multiply the given ⅝ in. radius by the constant 1.57. Thus, $0.625 \times 1.57 = 1$ in.

b) Draw the horizontal line S-T which is 1⅝ in. From T, draw a line perpendicular to line S-T. Measure the calculated length of the ⅝ in. radius arc K-M (Fig. 3), which is 1 in., and mark the point V.

c) From point V, draw a line perpendicular to line T-V. Measure the given width, 1 in., as shown on Fig. 3, and mark the point U. Draw the line U-S.

To Lay Out Back Pattern, Fig. 5:

a) With a flexible rule, measure the arc P-P″ and length H, marked 1 9/16 in. and 9/16 in. on Fig. 3.

b) Draw the 1 in. horizontal line P″-P″ (Fig. 5), and through one point draw a line perpendicular to and extending on both sides of line P″-P″.

c) From Fig. 3, transfer lengths 1 9/16 in. and 9/16 in. to both sides of line P″-P″ on Fig. 5, marking this perpendicular line N″-N″, and through the end points draw lines perpendicular to line N″-N″.

d) From N″ at top, measure 1 in. and mark the point 2. From N″ at bottom, measure 1⅝ in. and mark the point 3. Draw the lines 2-P″ and 3-P″.

e) From the lower point N″ measure 9/16 in., locating point H′. Draw a line perpendicular to line N″-N″ from point H′ to line P″-3, establishing a second point H′.

f) Draw a line perpendicular to line P″-P″ to intersect line H′-H′ and mark the difference in length with the letter D.

g) Draw a line perpendicular to line H′-H′ to intersect line N″-3 and mark the difference in length as F.

To Lay Out Offset Side Pattern, Fig. 6:

a) Draw the 2½ in. horizontal line K′-L′. From K′ measure 1¼ in. and mark the point O′. Through this point draw a line perpendicular to line K′-L′ and mark the line CL (center line). From O′ measure 1 in. on the vertical center line and mark the point P′.

b) From L′, measure ⅝ in. and establish the point R^4. From this point draw a line perpendicular to line K′-L′. With R^4 as center and radius ⅝ in. draw a 90 deg arc to intersect the perpendicular line at M″.

c) From M″ measure 1 in. and mark the point N″. With a compass measure length R^4-N″ which is 1⅝ in. and with P′ on line CL as center draw an arc through line K′-R^4. Mark the intersection point R^5.

d) With point R^5 as center and radius 1⅝ in. draw an arc from point P′ toward N′. From N″ draw a line tangent to the arc and perpendicular to line N″-M″.

e) Draw a right angle. From Fig. 3 transfer length A to the vertical leg and rise B, Fig. 4, to the horizontal leg. The hypotenuse A-B is the true length line. With P′ on Fig. 6 as center and radius A-B draw an arc. Transfer length C from Fig. 3 to the vertical leg of a right angle and rise B on Fig. 4 to the horizontal leg. The hypotenuse B-C is the developed line. With point K′ on Fig. 6 as center and radius B-C cut the arc which was made with radius A-B and mark the point 4.

f) Draw the line B-C connecting points K′ and 4. Bisect this line and draw a line perpendicular to line B-C. Working from Fig. 3, transfer length X to the perpendicular line and mark the point K″. Bisect arcs 4-K″ and K″-K′ and through the bisections draw lines to intersect at point O″. With O″ as center and radius O″-K′ draw the arc K′-4.

g) Transfer line E from Fig. 3 to the vertical leg of a right angle and rise D from Fig. 5 to the horizontal leg. The hypotenuse D-E is the developed line. With point P′ on Fig. 6 as center and radius D-E, draw an arc.

h) On a right angle transfer line G from Fig. 3 to the vertical leg and rise F from Fig. 5 to the horizontal leg. The hypotenuse F-G is the developed line. With point 4 on Fig. 6 as center and radius F-G, cut the arc made with radius D-E and mark the point P″.

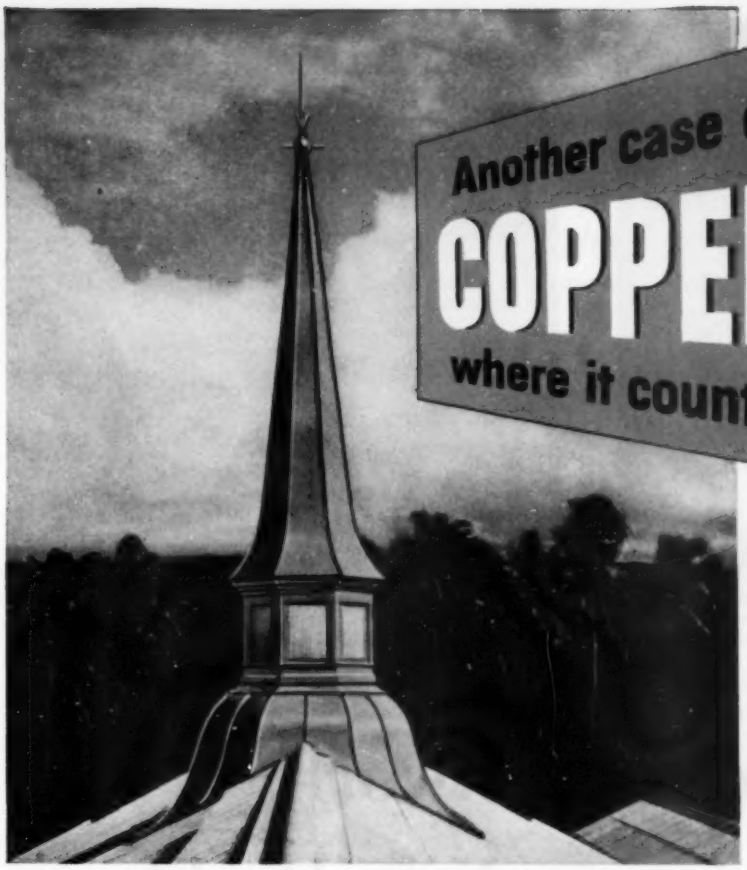
j) Find the center point of line D-E and through this point draw a line perpendicular to line D-E. From Fig. 3 transfer length Y to this perpendicular line on Fig. 6 and mark the point Z. Bisect the lines P″-Z and Z-P′. Through the bisections draw lines to intersect at point L. With L as center and radius L-P′ draw the arc P′-P″.

k) Measure line H′-3 on Fig. 5 and with point P″ on Fig. 6 as center draw an arc. With point 4 on Fig. 6 as center and radius 1 in., cut the arc H′-3 and mark the point 5. Draw the lines P″-5 and 4-5.

To Lay Out Straight Side Throat Pattern, Fig. 7:

Calculate the length of the throat pattern by multiplying the given radius by the constant 1.57. Thus, $0.625 \times 1.57 = 1$ in. Draw the 1 in. horizontal line 6-6′. From points 6 and 6′ draw vertical lines. Measure the calculated arc length 1 in., and draw the line 7-7′.

Add allowances for seams and joints and mark the patterns for fabrication.



18,000 LBS. OF NON-RUSTING REVERE COPPER, IN THE FORM OF PREFABRICATED ORNAMENTAL TOWERS AND SHEET, IS SENT TO THE SOUTH SEA ISLANDS TO FIGHT THE BATTLE OF CORROSION.

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In addition to its non-rusting characteristics copper was the ideal metal for fashioning the decorative towers, for it is so readily worked and can be soldered to perfection. That's why sheet metal men like you prefer copper to any other metal. In fact no other metal or alloy has all the desirable construction characteristics of copper. This proved metal is a good way to keep out of trouble-whether it be in the South Seas or on Main Street, U.S.A.

Protect *your* reputation. Give *your* jobs the many benefits of Revere Copper. See the Revere Distributor nearest you about Revere Sheet, Strip or Roll Copper for flashing and roofing. Particularly ask him about the money-saving advantages of Revere Keystone Thru-Wall Flashing* and the new Revere-Keystone 2-Piece Cap Flashing.** And, if you have technical problems, he will put you in touch with Revere's Technical Advisory Service.

*Patented **Pat. Pend.

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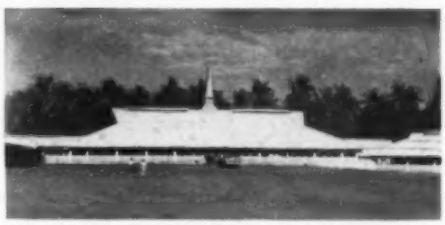


LIAHONA COLLEGE FOR GIRLS AND BOYS, Nukualofa, Tonga, showing tower made of non-rusting Revere Copper, close-up of which you see at top left. All buildings built by the Church of Jesus Christ of Latter-Day Saints.

PESEGA SCHOOL, Apia, W. Samoa.

VELOCITIES OF 2200 fpm or higher are used in many modern duct systems. In such cases, joints may be taped (*left*) and sealed with plastic compound, and sound boxes can be used (*right*) to reduce velocity noise at the point of diffusion

Modern Ductwork —New Techniques, New Problems

Today's materials and methods are versatile, but require experience for proper use. A proposed code defines the responsibilities of contractors and engineers working together on duct systems

By Lawrence O. Paul
Narowetz Heating & Ventilating Co.

WHEN WE THINK of sheet metal construction along with air conditioning, our thoughts immediately turn to ductwork or ducts. What is a "Duct?" Webster defines it as "any tube or canal by which a fluid or other substance is conveyed." This definition does not describe a duct as being, necessarily, a sheet metal section (either square, round, or in any other shape). Ducts can, if necessary, be made of other materials. However, no matter what material the air handling ducts are made of, they are handled and installed by the sheet metal trade. This practice is based upon past decisions handed down by the National Joint Board for Settlement of Jurisdictional Disputes, which consists of four members each from both labor and contractor groups.

The term "duct" is not new. It was applied to various means of conveyance in ancient times. The Egyptians, Greeks and Romans used ducts to convey water, heat or fumes. Evidence which has been uncovered shows these ducts to be made of brick, tile, or hollowed logs. The methods of making ducts did not change much over a

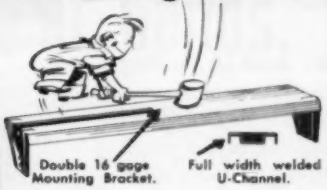
This article is taken from an address by the author to the Delta Chapter of the ASHVE at New Orleans.

"Dealers Prefer these New Viking BLOWER ASSEMBLIES"

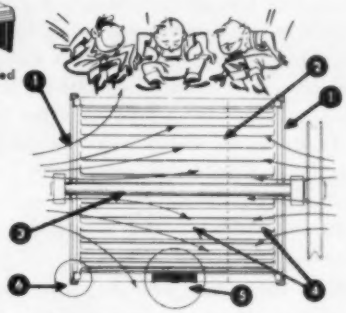
Confirms Tom McIntyre, congenial Viking Salesman;

"And wholesalers like 'em, too."

Here are 2 Big Reasons Why...



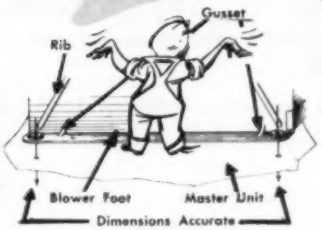
Added strength of mounting bracket insures pulley alignment reducing bearing and pulley wear.



1 End-Supported Wheel 2 Aerodynamic Center 3 Polished Shaft 4 Free Flow of Air 5 Balanced 6 Lock Seam Construction

Lock seam and end supports give greater blower wheel strength. Polished wheel shaft reduces bearing wear. No center support to impede air flow.

Read what these Experts Have to Say!



"My dealer's have always preferred Viking blowers, as package units and in furnaces and air conditioning units they install. They all like these new features Viking has now added, too. The strengthened blower feet with their extra accurate mounting holes should eliminate handling damage and installation time. All of which I like." **That comment from Ray Decker of Decker-Reichert Steel Company, Cleveland, Ohio.**

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"All of us like our jobs made easy. It's been easy to sell and install Viking Blower packages. Now you're making it even easier. Takes only one hand to tighten the motor to the mounting bracket now. I'm all for it in both the Blower Packages I sell and the Blowers I have to install in manufacturer's furnaces and air conditioners. Hope they all choose Viking." **So says John Donnelly of Donnelly Tinners, Cleveland, Ohio.**

To Furnace and Air Conditioner Designers:

A request on your letterhead for Viking's "Blower Assembly Workbook" brings you all the information you need for ordering a sample blower for your unit. Write today.

Viking

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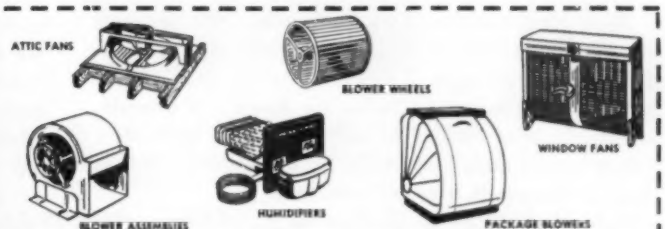
Cleveland 2, Ohio



long span of years, and it was not until steel could be produced on a large scale that metal sheets were widely used for fabrication into shapes to convey materials, air, and water.

Early Installations Suited Needs

With this new material available, new methods of forming and using ducts were developed (including methods for joining the various lengths after they were formed, for hanging ducts and for using the finished product to best obtain ventilation). When we look back at early installations, the work appears crude and bulky, but these installations were the start of our modern ductwork systems.

It was not very important then how much air, heating or cooling was introduced into a given area, since anything was an improvement over a fireplace or room heater. Also, not too much thought was given to how much a given cross-section of duct would carry (nor was much known about this). Fans were not available with certified ratings, and they were crude and bulky. Design was mostly on a trial and error basis, as is the case with most new developments. However, some men began to chart and catalog their findings, and others received the benefits of these long hours of trial and error.

Since early duct velocities were very low by modern standards, it was not important for the ductwork to be tight. The ducts were riveted, or even made with a slip fitting that was supported as best as possible. Bracing to prevent breathing was only installed on the large ducts because velocities and pressures were low. Nevertheless, these first systems of ductwork laid the groundwork for the improved methods we are now using. Velocities are being used that were unheard of a few years ago, and are being used successfully.

Economic Motive Behind Improvements

There have been many modern developments in ductwork fabrication, design, and materials. Machines have replaced the old hand method of making seams, and welding sometimes takes the place of the rivet and solder joint. Welding machines using inert gases make it possible to weld light gage galvanized iron and aluminum, so that though labor cost has increased, the total cost has been kept to a minimum and a better job produced. Also, the use of plastic sealers for ductwork joints eliminates the need for flanges, welding, or soldering. These sealers are used on new high pressure round ducts having a bell type fitting. These are all labor saving items, and they also provide a better appearing job.

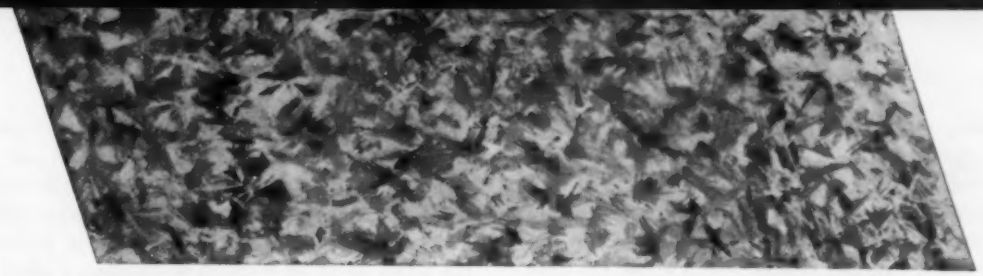
There have been many reasons for these changes, but the biggest driving force is an economic one — the desire to provide or build something just as good, if not better, for less money. Whether the desire is to provide a better basis of bidding against competition or to provide a greater margin of profit, the main motive behind these developments is an economic one.

The architect and engineer push new developments for the same reason. A prospective client says that he wants a certain kind of building and has so many dollars to spend. He wants X number of floors with a certain ceiling height and, of course, the building must be air conditioned. The architect and engineer find that building to these requirements means exceeding the budget. However, if they can eliminate or reduce the space for ductwork in the ceiling, they can reduce the height of the building some 10 ft and give the client all that he wants while staying at least within sight of the budget. Here is a necessity, and it brings in new thoughts as to how to save money and still get the desired results. The ducts get smaller, velocities are increased, and possibly the prime air is colder. The air conditioning contract is not decreased, nor is it increased, as we know from comparison. The saving is in the cubage of the building, effected by reduction in the area required to house ductwork.

ADDING DUCTWORK to existing ventilating systems and increasing initial velocities often make it possible to install air conditioning at lower costs — as was done at Chicago's International Amphitheatre

Modern Techniques, Materials Versatile

In Chicago we have a very good example of this. A new department store was being built and was under construction before the air conditioning work was out for bids. Interior changes required for store services made it impossible to retain the original conventional duct design. The furred ceiling would have had to be lowered to accommodate the required ducts. Instead, the system was redesigned and a semi-high pressure system installed. Since this store was being built during a steel strike, aluminum sheets were used. Initial velocities were 3500 to 4000 fpm; since we were using square ductwork, we were a little disturbed by the thought of what would happen to the ducts under the higher pressure. We made a mockup of an 8 ft section of duct, approximately 48 x 24 in. in size, cross broke the sides, and applied angle frames at the 4 ft sections. When air pressure was put inside the duct, the sides were extended approximately 3 in. at 6 in. of pressure. We redesigned the angle frames, and cross broke the duct at the 4 ft points. On the next test the sides were extended only



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UNITED STATES STEEL

approximately ½ in. in the center, with no break or rupture of the seams.

This aluminum ductwork was installed and sealed with blow pipe cement at all joints before and after making connections. It tested out with less leakage than a conventional system. In this system, sound absorbers were installed in the first duct section, and high pressure ceiling outlets with sound boxes were used for introduction of the air to the sales areas. This job is very quiet in operation and gives excellent distribution without affecting the architectural design.

In another store adjacent to the first, a semi-high pressure system was also installed with fewer sound absorbers and no sound boxes on the outlets. Round pipe was used and the outlets were tapped directly into the duct. This job is very successful and maintains a sound level below the normal store noise level.

Both of these systems were designed for reasons of economic necessity. Even though the contracts were smaller, my firm made as much if not more profit than if it had taken the contract on the original design. In each case, the owner was able to stay within his budget.

On the International Amphitheatre job in Chicago, which was air conditioned for the Republican and Democratic conventions, we found that even though the air requirements were greatly increased for cooling, we could use the major portion of the old heating system because the ductwork had been designed for low velocities. We reversed the old system so that we could supply overhead and returned the air under the balconies. A major operation was performed at a minimum of cost, and in a short period of time.

The possibilities of modern ductwork are not limited to new buildings. Many an "impossible" job can be turned into a contract with a little careful thought and application.

Since ducts, by definition, are not limited to metal construction, we should open our minds to the many other possibilities that are available. These include plastics, asbestos-cement boards and other board materials, either in flat sheets or fabricated sections. These materials are not handicapped by excessive weight. They lend themselves readily to specific uses, and though they may in some cases cost more for the original installation, they will more than pay for themselves when amortized over a number of years. Our company is watching with great interest the development of plastic ducts and sheets, and though we have not used any at this time, we will not hesitate to use them for the job that requires this material.

Duct Design Requires Experience

With the increasing possibilities for adapting modern ductwork to special needs comes an increasing emphasis on design. This in itself raises some problems.

In many cases, dealers and engineers who have made up detailed Btu sheets and carefully selected the equipment assign the design and layout of the ductwork system to inexperienced members of their staffs.

Equipment manufacturers have spent millions on developing and testing their products. They can provide almost any sized unit required and guarantee results with certified ratings. However, if an inexperienced man is assigned the task of tailoring the ducts to fit the job, all the hours spent in research to produce a good product will not be enough to correct the errors that may occur due to his lack of experience.

It is frequently the custom for the experienced mechanical engineer to hastily design the duct system, showing with either a rough sketch or a single line drawing the distribution plan and leaving it up to the sheet metal contractor to decide what is wanted or what actual size is required. Sometimes shop drawings are prepared which catch the inaccuracies that creep in when drawings are made in too big a rush. It will pay to give more thought to the design of this very important part of the air conditioning system, for if it is not designed correctly and economically, the best equipment manufactured cannot make the system operate.

Who's Responsible for End Results?

Though rough sketches of duct systems made up by engineers may give the sheet metal contractor much leeway, he generally asks for clarification so that he can follow the original plan as closely as possible. This is because the contractor or dealer knows that should he make changes, even if they are for the better, the engineer can relieve himself of responsibility for the correct operation of the system.

In the usual contract specifications, there is a paragraph entitled "guaranty," which states in some form that the equipment and materials specified "shall be guaranteed for a period of one year from date of acceptance of the job." It goes on to state that if air quantities and conditions as required are not obtained, the contractor shall without charge to owner or agent make such changes in equipment and materials as are required to obtain the desired conditions.

If engineers have designed ductwork and selected equipment which does not produce the desired results, and if the ductwork and equipment are installed by the contractor as specified, it is not fair that the contractor assume the responsibility for poor design. Engineers should in all fairness ask that the sheet metal contractor either guarantee that the system has been installed as designed, or that he guarantee end results, with changes in design and equipment specified by his staff.

Concerning the period of time the guarantee should cover, we find that very often the sheet metal contractor is left holding the bag on equipment. The one year period covering the equipment starts from the day it leaves the factory. Even though it is installed in the building at once, usually to facilitate handling, the job may not be ready for an acceptance test for another 12 months. Should the equipment fail during the following 12 months, contractors have no recourse to the manufacturer. This is a problem that should be given adequate attention because bids can seldom be submitted

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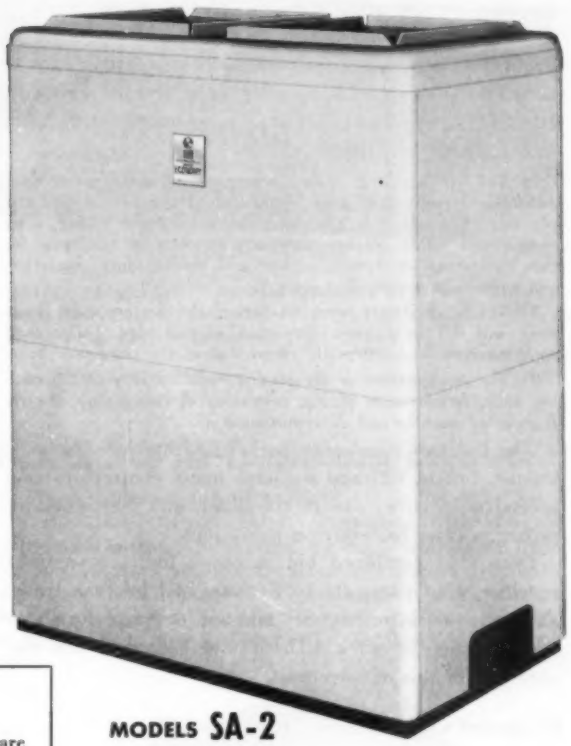

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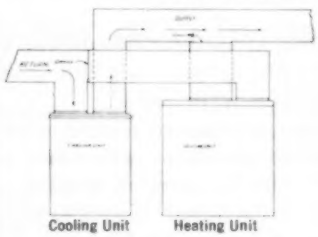

Air movement and filtering are provided efficiently and economically by a separate blower in the self-contained cooling unit. Warm, humid air in the summertime is excluded from the furnace itself by a simple damper arrangement.

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that can take equipment failure into consideration.

Another source of concern to contractors figuring a job is the specifications usually given for motors and motor starters. For example, the specifications may read, "provide 10 hp, 220/440 volt-3 phase, 60 cycle, 1800 rpm motor with combination magnetic non-fused starter." However, since starter sizes are dependent on the correct voltage, a call to the engineer is required for clarification. It is an easy matter for mechanical engineers to determine the correct voltage required and to state this in their specifications.

Allocating the Work

As the installation and design of ductwork and related equipment takes place on a larger and larger scale, the question of allocating different phases of the work to different trades becomes more intricate. In order to avoid jurisdictional disputes and possible strikes, it is necessary that all work be assigned to the proper trade. In Chicago, we break down an air conditioning system into three major parts:

1) The air handling system comprises all sheet metal components, 10 gage and lighter, consisting of the fan, or fan supply unit, less coils, but including the casing, coil casing, filter section and filters, intakes, necessary supports or platforms for this equipment, ductwork, outlets and grilles, duct insulation, and controls if electrical.

2) The steam fitters' work consists of the heating cycle, complete with all coils, pipe, insulation of this pipe, boilers and appurtenances, and automatic controls if of the pneumatic type.

3) The refrigeration or air cooling cycle consists of the cooling coils, refrigeration piping, insulation of this piping, the refrigeration machine and all appurtenances.

The last two items may be handled by the same contractor, but in Chicago we have many contractors who specialize in either one or the other, and they work together in close harmony on many jobs.

Even if a combined bid is called for, the engineer specifies what parts are to be furnished by each trade, and each subcontractor only guarantees the performance of his section of work. There have been very few disputes under this arrangement.

Proposed Code Clarifies Responsibility

The Sheet Metal Contractors National Association has made available a pamphlet, A Proposed Code of Trade Practice for Ventilation and Air Conditioning Work. It is obtainable through local sheet metal contractors. The code states, in part, that today's widespread acceptance of ventilating and air conditioning for human comfort "makes it desirable that a better understanding be established between sheet metal contractors engaged in ventilating and air conditioning work and engineers and architects designing and specifying these installations."

It further clarifies the position of sheet metal contractors engaged in this work, listing a number of their "beliefs" as follows:

1) The science of ventilating and air conditioning is technical, intricate and scientific, requiring a high degree of training, experience and practical knowledge on the part of the engineer, architect and contractor.

2) The preparation of plans and specifications should be the work of qualified engineers and architects rather than an agency of a manufacturer or distributor not qualified to render complete service.

3) It is desirable to have plans and specifications of engineers and architects prepared separately for the various trades involved in the work (except in cases where the ventilation is a minor item) with no guarantee by the contractors except for quality of materials and workmanship and adherence to the plans and specifications.

4) The ventilating contractor should be asked for no guarantee beyond the quality of materials, workmanship and mechanical operation of the system within the scope of the plans and specifications.

5) To secure the most satisfactory results for the owner, contracts for ventilating and air conditioning installations should be negotiated with the ventilating and air conditioning contractor rather than through some other contractor.

6) The man who pays the bills — the customer — is the person having rights of paramount importance.

It is stated as the further belief of sheet metal contractors engaged in ventilating and air conditioning work that proposals for complete installations of ventilating and air conditioning should be submitted to:

1) Qualified engineers and architects acting directly for the owners or lessees.

2) Qualified general building contractors when acting as direct representatives of owners or lessees, where the ventilating and air conditioning installation is included in the general contract.

3) Federal, state, county and municipal government agencies, public owners or lessees of buildings or properties in which the installation is to be made.

The code recommends that engineers, architects and sheet metal contractors engaged in ventilating and air conditioning work accept these principles as a measure of mutual agreement.

WARM AIR HEATING FOR ORCHIDS

COMMERCIAL ORCHID growing is another application to be added to the rapidly growing list of warm air heating uses, the National Warm Air Heating and Air Conditioning Association reports. Following two full years' operation of a forced warm air system in his orchid greenhouse, Frank Vattimo, florist, Andalusia, Pa., reports that his heating results (as reflected in plant health and seedling growth) far exceed prior results with other methods of heating.

In addition, Mr. Vattimo reports that operation of his warm air system has cost him comparatively little — one third of the cost of previous methods used.

Because he can achieve simultaneous control of temperature, humidity and air circulation with warm air heating, Mr. Vattimo is able to create an atmospheric environment closely akin to the climatic conditions under which the plants grow in their natural habitat.

The orchid greenhouse is 90 ft long, 15 ft wide and 10 ft high to the peak. It contains about 2500 sq ft of exposed glass area. Heating and winter air conditioning are accomplished with a 200,000 Btu oil fired winter conditioner centrally located. Temperatures of 62 to 65 F and relative humidities of 55 to 60 per cent are maintained throughout the winter season. Louvered diffusers in the furnace bonnet direct the air stream out over the tops of the plants.

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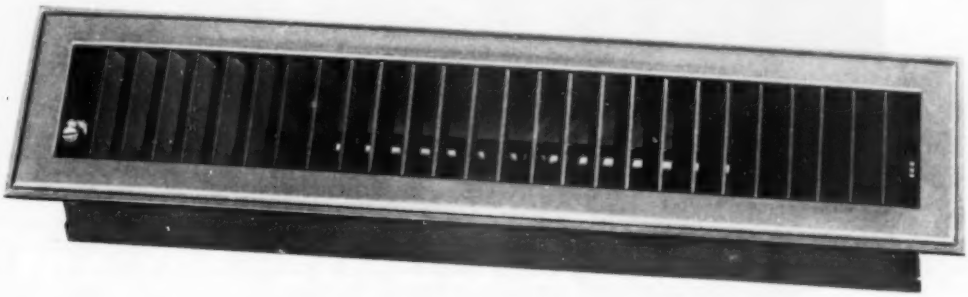
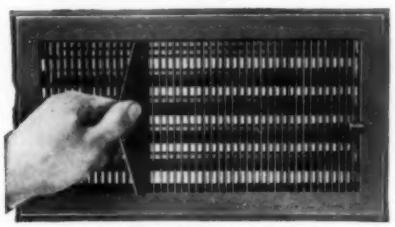


This is the finest of the floor diffusers. It spreads the air widely to blanket cold glass and wall surfaces, can be balanced with set screw on register without interfering with closing register. Has narrow 5/8" frame. The U. S. line also includes base diffusers for both baseboard out-of-wall (No. 132¼ and No. 133¾) and in-the-wall installation (No. 1356).



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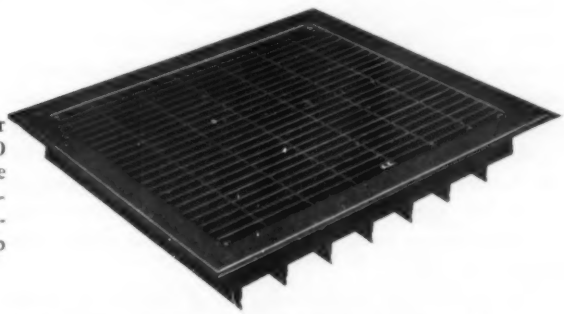
U. S. is one of the few manufacturers that supplies your complete needs for Gravity systems. In addition to No. 400 Trussteel, with its highly efficient close-mesh design, there are cold air faces and baseboard registers to solve every gravity heating problem. *One* source of supply, pooled shipments, *one* invoice is the best way to keep your profits up this year.



COMING SOON! NEW DEVELOPMENTS FOR PERIMETER HEATING INCLUDING THE FINEST IN CONTINUOUS STRIP BASE REGISTERS. WATCH OR WRITE FOR ANNOUNCEMENT.

UNITED STATES REGISTER COMPANY

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SOLD BY LEADING JOBBERS FROM COAST TO COAST

IN A "SURPRISE" presentation at the residential air conditioning session during the National Association of Home Builders' convention, A. B. Newton *(left)* and Don V. Petrone *(right)*, both representing the Air-Conditioning and Refrigeration Institute, award a handsome plaque to Ned A. Cole, of the NAHB, recognizing his "initiative and leadership in increasing public interest in air conditioning"

Home Builders Like Cooling

. . . . feel that "no better equipment can be put into a house." Session at big NAHB convention talks over practices

IN FIVE or 10 years, "every house built by a speculative builder to sell for over $12,000 will be air conditioned where the climate makes it necessary — and that's a major part of the United States," said Ned A. Cole, a builder, and chairman of the residential air conditioning session held during the 10th annual convention and exposition of the National Association of Home Builders in Chicago last month. Air conditioning is "one of the foremost topics of interest — public relations-wise — in the home building industry today, tremendous progress having been made in the last two and a half years," he stated.

"Residential air conditioning is of interest to many groups," he continued, " including doctors and psychologists, who see the possibility of many beneficial effects. However, it is the home owner himself who shows the greatest amount of interest in air conditioning."

Mr. Cole presided at the well-attended session, which ran all afternoon on one of the busiest days of the big convention. A panel of experts representing both the home builders and the air conditioning industry briefly discussed various phases of the subject.

Jack Sargent explained that the principal aim of the NAHB's air conditioning subcommittee is "to solve the speculative builder's air conditioning problems, and keep him out of trouble." This committee is working with associations in the air conditioning industry, such as the National Warm Air Heating and Air Conditioning Association, and the Air-Conditioning and Refrigeration Institute, he said. The "air conditioned village" of some 20 houses in Austin, Texas, is being built to secure information on figuring cooling loads for various types of houses, the installation and use of air conditioning equipment, the promotion of air conditioning, and for developing data on initial and operating costs for the FHA and VA.

FHA, VA Approvals

Decisions on the part of the FHA and the VA concerning air conditioning are almost 100 per cent local, it was stated. Washington is "receptive," but leaves the matter pretty much up to the field offices. The air conditioning industry must therefore provide "guide material" to the FHA and VA field offices, who in many

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THEY'RE **COMPACT**

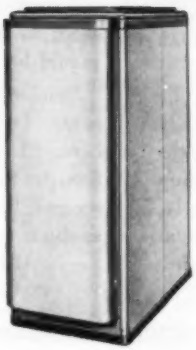
THEY'RE **IN DEMAND**

THEY'RE **EFFICIENT**

MONCRIEF'S *New* GUN OIL FIRED UNITS for the *Small Home*

Counterflow Unit
No. PHC-85-E

The Basement Air Conditioning Unit with the NEW . . . attractive "Add-On" Vestibule that conceals and protects burner and controls.



Basement A. C. Unit
with burner exposed
No. P-71-E

Utility Unit
No. PH-85-E

COUNTERFLOW UNITS
with 84,000 B. T. U. at Discharge Outlet
ONLY 20 INCHES SQUARE

•

UTILITY UNITS
with 84,000 B. T. U. at Bonnet
ONLY 20 INCHES SQUARE

•

BASEMENT A. C. UNITS
with 71,000 B. T. U. Register Output
ONLY 20 INCHES WIDE, 36 INCHES DEEP

WELDED STEEL HEATING ELEMENTS . . . SPECIALLY DESIGNED, NON-CLOGGING BURNER NOZZLE

Give the builder what he wants — a trouble free unit for the small home which REQUIRES LESS FLOOR SPACE. See your Moncrief jobber today for complete details.

THE HENRY FURNACE COMPANY • *Medina, Ohio*

HEATING AND AIR CONDITIONING UNITS — MONCRIEF SINCE 1895 — FURNACE PIPE AND FITTINGS

areas are "a bit severe and skeptical" on initial, operating and maintenance costs.

The builder's air conditioning problem starts with the land itself — orientation of the house, sun control by shading or other methods, etc.

Harold Sarshik, of Camden, N. J. — introduced as "one of the leading producers of air conditioned houses in the country" — described a development of 80 air conditioned homes in New Jersey built with conventional financing, and thus requiring higher down payments than under FHA mortgages. While the development was "a great success," he felt that this was not due solely to the air conditioning, as the homes would have sold equally as well without it. However, he thinks that, after one summer's experience, it would be impossible to take air conditioning away from any owner. To get the average person to fully comprehend all the advantages of living in an air conditioned house is an important merchandising problem for the builder. He feels that there is "no better equipment any builder can put into a house than air conditioning."

Offer as an Option?

It seemed to be the consensus of the panel that air conditioning should not be offered as an option. This not only complicates the planning of the house, but when the air conditioning is optional, the sale may be made on a day that is comfortable — and at that time, the difference in cost may look better to the purchaser than does the air conditioning.

It was stressed also that air conditioning must be fitted into the salable house — that people aren't ready (at least yet) to live in houses with extreme designs which might be desirable in order to reduce the cooling load. However, strip windows can be used sparingly, for such areas as bedrooms, baths, kitchens, etc. Orientation of the house can also aid in reducing the cooling requirements. For example, it was mentioned that 90 sq ft of glass on the north side of a house might represent 0.3 tons of cooling capacity, whereas on the west side it might represent 1 ton. Thus, 0.7 tons of cooling could be saved by proper orientation.

Insulation Cuts Cooling Cost

Along the same lines, Frank Parsons, of the National Mineral Wool Association, pointed out that it is less expensive to insulate a house completely and thus permit use of a smaller cooling system. A study made for the NMWA indicated, in one case, that 6 tons of refrigeration would be needed for a house with no insulation, 3 tons for one with 4 in. of ceiling insulation, and 2 tons with 3 in. of wall (and no ceiling) insulation. It was estimated that the equipment cost for the 2 ton rather than the 6 ton job would be $840 less, and that the insulation would cost $240 — resulting in a net saving of $600. Further, an operating cost of $3.90 for a design day with no insulation would be reduced to $1.60.

Other members of the panel pointed out that vapor barriers are "prime necessities" in some areas, and they warned that a vapor barrier "is only as good as it's installed." If the electricians or the plumbers cut holes in it, it can't keep out moisture. Mr. Sarshik said it was his practice, with crawl space homes, to use 55 lb roll roofing with 2 in. of sand, or 90 lb roofing without sand, as a vapor barrier — and that such a barrier should be on the ground of the crawl space.

Brief reviews of the fundamentals of various components of cooling systems were given by the panel members. In concluding the session, Mr. Cole said he thought that, next to the question of vapor barriers, it seemed that the matter of the refrigerant condensing medium (water, air, etc.) demanded the most thought of the NAHB air conditioning subcommittee.

ASHVE ELECTS HUNTER, DISCUSSES RESIDENTIAL CONDITIONING

An entire roster of new officers was elected by The American Society of Heating and Ventilating Engineers at its 60th annual meeting, held in Houston on January 25 to 27. Among the officers elected are Louis N. Hunter, National Radiator Co., president; John E. Haines, Minneapolis-Honeywell Regulator Co., first vice president; John W. James, McDonnell and Miller, Inc., second vice president; and E. R. Queer, Pennsylvania State College, treasurer. A. V. Hutchinson remains executive secretary, Carl H. Flink, technical secretary, and David T. Donovan, assistant secretary of the society. The new council consists of L. N. Hunter, chairman; John E. Haines, vice chairman; John H. Fox, Arthur J. Hess, C. H. Pesterfield and Benjamin H. Spurlock, Jr., three years; I. W. Cotton, A. W. Edwards and L. T. Mart, two years; and M. K. Fahnestock, P. B. Gordon, R. T. Kern and D. M. Mills, one year.

Houston, which maintains the title, "America's most air conditioned city," was toured by members and their wives between business and technical sessions.

Cooling of small residences, room air distribution in year 'round conditioning, utilization of solar energy, and similar topics related to home heating and cooling were covered at the technical sessions. Among the papers presented were:

Prediction of Cooling Tower Performance, W. W. Smith, College Station, Tex.

Pressure Loss of Air Flowing through 45 Deg Wooden Louvers, Phil R. Cobb, College Station, Tex.

Availability and Utilization of Solar Energy, R. C. Jordan and J. L. Threlkeld, Minneapolis.

Room Air Distribution Research for Year 'Round Air Conditioning — Part II, Supply Outlets and Three Floor Locations, H. E. Straub and S. F. Gilman, Urbana, Ill.

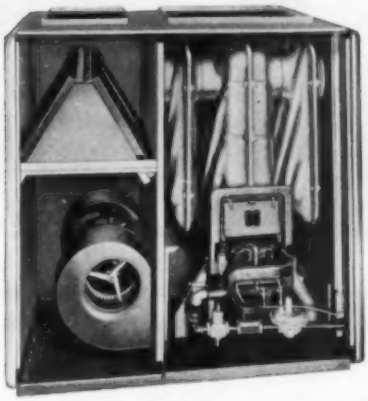
Cooling a Small Residence Using a Perimeter Loop Duct System, D. R. Bahnfleth, C. F. Chen and H. T. Gilkey, Urbana, Ill.

Rear view, showing two radiating sections (B) on each side of combustion chamber (A). Furnaces of larger capacity have additional radiating sections.

THE HEAT EXCHANGER THAT MADE NiAGARA FAMOUS

Continues Year After Year as a Great Money-Maker for Heating Contractors

The Deluxe Series 50 Gas-Fired Furnace. Shown at right with front panels removed to show the famous Niagara cast-iron heat exchanger and 3-speed direct-drive blower.



Installers and users alike are enthusiastic praisers of the cast-iron heat exchanger illustrated above. That's because the Niagara Series 50 furnaces in which these heat exchangers are used exclusively have become widely known for their efficiency and low operating cost . . . and because the combustion chamber section of the heat exchanger is made of copper-chromium-iron alloy, noted for withstanding high temperatures, assuring long life. The radiating sections are gray cast iron.

Niagara Series 50 furnaces are money-savers for home-owners who use them. Niagara Series 50 furnaces are both money-makers and prestige-builders for contractors who install them. There are models for large and small homes. Deluxe models are available with special features, including 3-speed direct-drive blower, diaphragm gas valve and push-button lighter.

Write Now **for Today's NIAGARA Story**

Niagara also makes a wide variety of gas and oil furnaces with steel heat exchangers, a few of which are shown here — and summer air conditioners, designed to use the air ducts and blowers of forced air heating systems.

Model 40-90AC GAS (STEEL)

Series 60 AC Oil-Gas Convertible (STEEL)

Series 60VAC OIL Oil-Gas Convertible (STEEL)

Series 60DFAC GAS Oil-Gas Convertible (STEEL)

Model 40-80VAC GAS Up-Flow (STEEL)

Model 40-80DFAC GAS Down-Flow (STEEL)

NIAGARA FURNACE DIVISION THE FOREST CITY FOUNDRIES COMPANY
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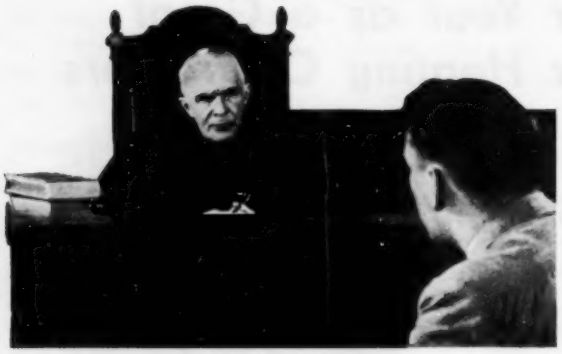
NiAGARA is the word for MAXIMUM HEAT at MINIMUM COST

YOUR BUSINESS AND THE LAW

What Business Costs Are Deductible?

. . . according to income tax law, only those which are ordinary, necessary and directly connected to the taxpayer's trade. However, the courts have sometimes differed in their interpretation of these key terms

By Albert W. Gray



A PROVISION OF the income tax law of vital importance to air conditioning and warm air heating dealers states, in part:

"In computing net income there shall be allowed as deductions all the ordinary and necessary expenses paid or incurred during the taxable year in carrying on any trade or business."

In an interpretation of this clause that was sustained by the Supreme Court of the United States, the federal district court said:

"The cases seem to set forth a common principle, namely, that an expense is deductible by the taxpayer if it arises directly, that is to say approximately, out of the course of the business which the taxpayer is regularly carrying on and can be fairly described as an 'ordinary and necessary' expense thereof."

Court Defines "Ordinary Expense"

The expenses to which the court referred here were made in financing the purchase of stock by a corporation in order that all the officials should be stockholders of the company. The Supreme Court of the United States in sustaining the decision that this payment was not deductible as an ordinary and necessary expense said:

"These payments were not ordinary ones. 'Ordinary' has a connotation of normal, usual, customary. To be sure, an expense may be ordinary though it happen but once in the taxpayer's lifetime. Yet the transaction must be of common or frequent occurrence in the type of business involved. One of the extremely relevant circumstances is the nature and scope of the particular business out of which the expense in question accrued. It is the kind of transaction out of which the obligation arose and its normalcy in the particular business which are crucial and controlling."

That decision of the Supreme Court supplemented a previous one by the same court in relation to this provision of the income tax law involving the deduction of attorney's fees in the defense of a suit against the taxpayer, which the court held was an expense of this character.

"In the application of the act we are unable to perceive any real distinction between an expenditure for attorney fees made to secure the earnings of the business and like expenditure to retain such earnings after their receipt. One is as directly connected with the business as the other."

Expense Must Relate to Taxpayer's Trade

Not only must the payment by the taxpayer be an "ordinary and necessary" expense but it must also have been made in the conduct of the particular trade or business in which the taxpayer was engaged.

In another dispute over a tax deduction that came before this court for decision, the taxpayer had deducted as an expense a loss he had incurred in an isolated transaction, the endorsement and subsequent payments of the notes of another corporation. This, the court held, was not an ordinary expense but one in an isolated transaction that was not deductible under the statute.

This distinction between expenses incurred in the business of the taxpayer and expenses that are unrelated to the business becomes clear in the decision of a controversy before a federal appellate court a few years ago.

The president of a corporation had become hopelessly insolvent, and from time to time before his death had borrowed from several salesmen of the company until

(*Please turn to page* 80)

Albert W. Gray, author of this article, has had over 20 years' experience as an attorney in the courts of New York City. He has written widely on legal matters and is the author of "The Family Legal Adviser".

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STREAMLINE DESIGN • LESS AIR RESISTANCE • LESS AIR LEAKAGE!
There's a reason why Lamneck Fittings have less air resistance and leakage than others. That reason is because Lamneck Fittings are factory fabricated to match accurately, so as to always give you a snug tight fit.
Besides making a handsome efficient job every time, Lamneck saves you money . . . up to 30% in materials and labor!
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1954 ... the big year

NOW...YOU CAN AFFORD TO BE COOL THIS SUMMER!

Keep last summer's sweltering heat a memory! You can now air condition *every* room (or any combination of rooms) in your home or place of business . . . by circulating filtered, cooling air through the same air ducts that warm your home in winter.

HERE'S WHY YOU CAN AFFORD IT . . . Janitrol conditioning is an investment that will repay you both in comfort and dollars. It adds customer appeal to your place of business. Owners report that their property value is increased more than the cost of their conditioning unit. Leading realtors agree that summer conditioning leads all other features in making a home worth more. Janitrol cooling is an improvement approved for FHA loans.

This modern method of conditioning is possible with the Janitrol summer conditioner . . . designed for *more* comfort, *more* economy and *more* real satisfaction. This unit is a complete, independent cooling system, engineered by Surface Combustion Corporation—manufacturers of precision heating and humidity control equipment for America's leading industries.

With the self-contained Janitrol conditioner you can modernize your conditioning at your convenience. You can

Add the Janitrol summer conditioner to your present warm air furnace

Install a Janitrol oil or gas furnace now—add the "twin" summer conditioner later

Obtain complete year 'round conditioning with the Janitrol Win-Sum (Winter-Summer) Twins. (See them below.)

CHECK THE FEATURES BEFORE YOU CHOOSE

FILTERED COOLING
Over 5 square feet of filters removes the dust, dirt and pollen from the Janitrol cooled air. A welcome relief for allergies and a cleaner home, too.

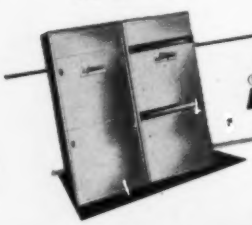
5-YEAR WARRANTY
Your Janitrol refrigerant unit is factory sealed . . . just like your refrigerator. This cooling system is fully covered by a 5-year warranty.

REDUCED HUMIDITY
Janitrol conditioned air is crisp 'refreshing'. Humidity is reduced, even on muggiest days.

SPACE SAVING
You need only a 27 inch square of floor space for your Janitrol conditioner. It's out of the way in your utility or recreation room.

WHISPER QUIET
Janitrol is the quietest unit built. The rubber mountings and thick insulating blanket lining efficiently absorb operating sounds and vibrations.

ENJOY YEAR 'ROUND COMFORT WITH THE WIN-SUM TWINS
Have balanced summer cooling *and* winter heating. Just add the matching Janitrol Winter Conditioner to your summer cooling unit. The 1954 Deluxe gas heating units have Janitrol's exclusive Duro-tube construction . . . the "armored heart" of your furnace that's practically indestructible!



Janitrol Win-Sum Twins

FREE INFORMATION Call on your Janitrol Dealer. He's listed under "Furnaces" in the yellow section of your phone book. Or, send your name and address to: JANITROL DIVISION, Surface Combustion Corporation, Dept. SP-2, 400 Dublin Ave., Columbus 16, Ohio.

Your prospects will see advertisements like this in leading magazines.

for year 'round conditioning

..THE BIG YEAR FOR JANITROL DEALERS!

Summer cooling is *hot!*

Hundreds of thousands of dollars of publicity and advertising have promoted year 'round home comfort. Millions of people visited thousands of summer cooled model homes during the past year.

Never was a market more "ready"!

As explained in the consumer advertisement on the facing page, Janitrol Summer Units can be "twinned" with new or old Janitrol Gas-Fired Winter Conditioners to provide year 'round comfort. And, the ease of *adding* summer cooling in the future is an important sales feature in selling Janitrol heating *now*. You can install Janitrol Summer Conditioners with the same confidence you've had over the years with Janitrol heating equipment.

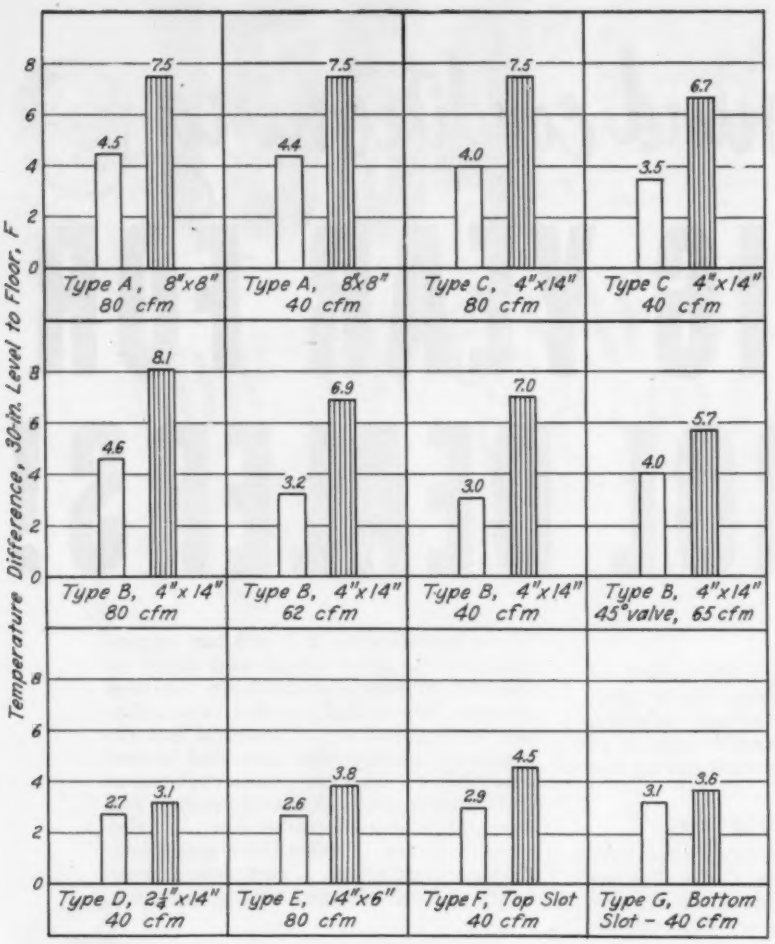
Because of design simplicity, Janitrol Win-Sum Twin installations are reasonably low priced for the mass market.

This year, 1954, will be a "big" year in year 'round conditioning . . . so, get set with Janitrol to sell more cooling which in turn will get you more heating business.

Three models with 2, 3 or 5 ton capacities are the same height and depth as Janitrol Winter Conditioners, features include: hermetically sealed twin cylinder cooling units . . . powerful but exceedingly quiet rubber mounted blower assembly . . . single phase continuous duty motor with adjustable pulley and thermal over-load protection . . . disposable filters . . . extra thick acoustical-thermal insulation . . . complete accessibility at front of smart blue-gray casing.

Janitrol Win-Sum Twins

JANITROL Division, Surface Combustion Corporation
400 Dublin Ave., Columbus 16, O.


Temperature Difference, 30-in. Level to Floor, F
Type A, 8"x8" 80 cfm
Type A, 8"x8" 40 cfm
Type C, 4"x14" 80 cfm
Type C 4"x14" 40 cfm
Type B, 4"x14" 80 cfm
Type B, 4"x14" 62 cfm
Type B, 4"x14" 40 cfm
Type B, 4"x14" 45°valve, 65 cfm
Type D, 2¼"x14" 40 cfm
Type E, 14"x6" 80 cfm
Type F, Top Slot 40 cfm
Type G, Bottom Slot - 40 cfm

3 ROOM AIR TEMPERATURE differences with seven types of registers. The shaded bar represents the differential from floor to 60 in. level; the clear bar, from floor to 30 in. level

HEATED SLAB —

(*Continued from page 51*)

temperatures decreased slightly when larger window areas were used. In general, the floor surface temperatures were not markedly different for rooms with and without windows.

7) One factor should be emphasized. The conditions of the test were such that the room was being heated almost entirely by panel heating effect from the floor surface above the perimeter duct, and not from register air. As far as room air temperature conditions are concerned, it can be expected that the results would not be as favorable when less panel heating and greater convection heating from warm air registers are utilized. On the other hand, when a large portion of the heating is done by means of warm air registers, the temperature of the concrete slab will not be as high as is shown in Fig. 1, and the heat loss through the slab floor to the outdoors will be less.

Four Types of Registers Used

In a normal warm air perimeter heating system, although some amount of floor panel heating effect is obtained, a large part of the heating effect is obtained from the warm air discharged into the room through registers. Early in the research program it was discovered that the room air temperature distribution was greatly affected by the manner in which the air was introduced into the room. In the Floor Slab Laboratory, four types of registers were tested:

1) Floor registers of types in common usage with conventional warm air heating systems.

2) Narrow floor register developed for perimeter heating.

3) Conventional baseboard register.

4) Slot-outlet baseboard units, with continuous slot openings.

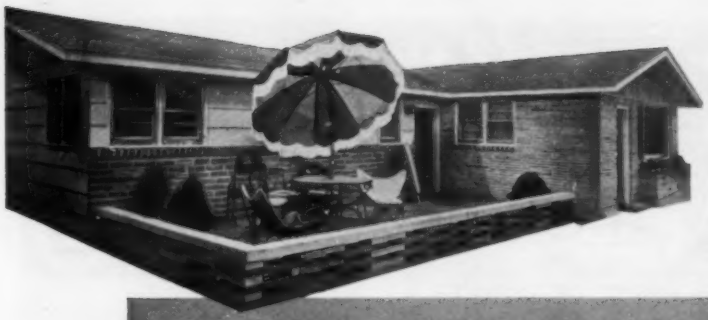
Since the investigations described here, many additional types of baseboard diffusers and baseboard slot-type units have been developed and made available commercially. No data is available from such newer types as far as the Floor Slab Laboratory is concerned. However, an extensive series of investigations is underway at the University of Illinois in the Cold Room, and the results from these more complete tests will be made available at a later date.

The registers investigated, seven in number, are shown in Fig. 2. For each register the room air temperatures were measured at the same outdoor air temperature and the same register air temperature. In every case, the air temperature at the floor level was lower than the air temperatures at either the 30 in. level or the 60 in. level, when the measurements were made in the center of the test room. The most significant data obtained from this study has been replotted by the author and is shown in Fig. 3. In this figure, the clear bar graph represents the temperature difference from the 30 in. level to the floor level. For example, for the type A register of 8 × 8 in. size handling 80 cfm, the differential was 4.5 F. That is, the temperature at the 30 in. level was 4.5 F higher than that at the floor level. The shaded graph represents the temperature difference from the 60 in. level to the floor level. For example, for the same type A register, the temperature at the 60 in. level was 7.5 F higher than that at the floor level.

Good Results Obtained

The following observations can be made from the data shown in Fig. 3:

1) The type A, 8 × 8 in. register gave the least satisfactory result since the values for temperature difference were large. Studies of the air cur-



TRADE SECRETS HOUSE
at Better Homes Show, New Haven, Conn.—equipped throughout with Kno-Draft Overhead Air Diffusers.

Sell the heating system that's ALL READY FOR COOLING

WITH KNO-DRAFT Overhead Air Diffusers you can offer not only the finest kind of warm air heating, but a system designed in advance for future cooling—a mighty important feature for today's home builders and buyers.

Kno-Draft takes you out of price competition. You're not selling "outlets"—you're selling *air mixers* that equalize temperatures for the greatest possible comfort. You can guarantee your customers: no drafts, no smudge, no interference with furniture placement.

What's more, you can get Kno-Draft Overhead Air Diffusers with or without integral lighting fixtures—an extra source of customer satisfaction.

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Company.....

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City.....Zone.....State.....

rents in the rooms made with smoke showed that the column of high velocity air was projected vertically towards the ceiling without much spreading.

2) The type C, 4 × 14 in. nondeflecting type registers showed only slight improvement. In this case also, the air stream did not spread as it left the register.

3) The type B, 4 × 14 in. nondeflecting registers showed only slight improvement over type A, and then only with smaller rates of air flow.

4) The type B, 4 × 14 in. register with 45 deg valve settings showed lower ceiling air temperature and slightly lower temperature at the 30 in. level as compared with the type A register.

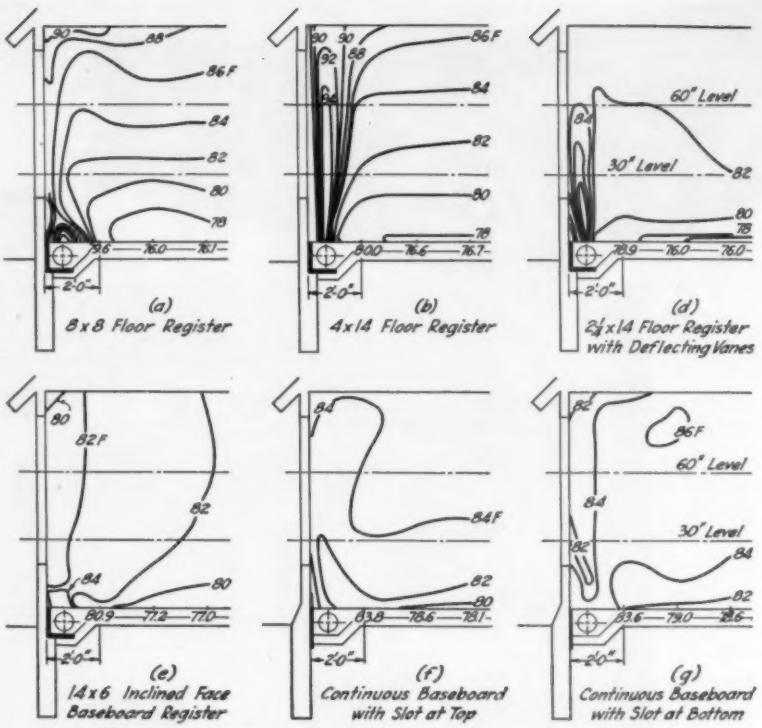
5) The four different outlets for which the bar graphs are shown at the bottom of Fig. 3 showed markedly improved performance. The type D, 2¼ × 14 in. floor register with variable deflecting vanes gave excellent results. With this register the air was fanned out as the stream left the face of the register, and effectively covered the windows.

6) The type E, 14 × 6 in. inclined face baseboard register produced substantially the same temperatures in the living zone as did the type D register, but was accompanied by higher air velocities in the living zone. The region having an air velocity of 100 fpm or greater extended into the room about 3 ft. Some possibility exists for excessive air motion in the living zone.

7) The continuous slot baseboard outlets gave results practically the same as those obtained with type D.

Air Temperature Profiles

Confirmatory evidence of the paths of air flow from the registers is shown in Fig. 4, which represents the temperature profiles in the rooms. The room air temperatures were maintained at 82 F when the outdoor temperature ranged between 35 F and 45 F, so that the general level of air temperatures was higher than would be normally experienced in a home. Nevertheless the temperature profiles should be representative of these perimeter type registers. In every case, a blanket of warm air effectively covered the windows so that difficulty due to cool currents was largely eliminated.



4 AIR TEMPERATURE PROFILES in rooms with registers show that the general level of air temperatures was higher than would be normally experienced in a home. In every case, a blanket of warm air covered the windows

This discussion concludes the reports of studies dealing with perimeter warm air heating used in connection with slab floor type structures.

WITH CURTAIN WALLS — MORE RENTAL AREA

OVER 3 PER CENT more rental area is available in Pittsburgh's Gateway Center development (comprising three large office buildings) because curtain wall panels have been used instead of conventional masonry walls, according to recent figures released by the American Iron and Steel Institute. It is estimated, the institute reports, that steel curtain wall panels would have added 2 or 3 per cent more rentable floor space had they been used in New York's Rockefeller Center.

In addition, use of these panels reduces by about 10 or 15 per cent the deadweight that must be supported by the structural framing and foundations of buildings, the institute states.

The institute also describes maintenance costs as being at their lowest with steel panel exteriors. It is pointed out that in the work of construction, the high cost of handling numerous small pieces is eliminated.

Erection is also unusually rapid. On one of the 20 story Gateway Center buildings, the wall panels for 17 stories were erected in 15 days. At a later date, two stories were completed in a day.

In order to give impetus to the use of curtain walls, research is going on at an eastern university, the institute points out. Steel curtain walls are used in commercial, industrial, and other types of structures. In some cases, stainless steel is used; in others, porcelain enameled steel and (in a few cases) plain painted steel.

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MACHINE FOR FORMING roof seams is explained by T. J. Boyd and A. L. Veverka

ENJOYING THE MUSIC after the banquet are (*l. to r.*) Mr. and Mrs. John C. Kirkpatrick, John J. Yager, and Mr. and Mrs. Paul Gilbert

MORE APPRENTICES —

(*Continued from page* 53)

7½ cents per hour for the sheet metal trade, with 10 cents per hour being the highest rate. There are now 57 different plans in use, and welfare benefits have been paid totaling $375 million. There is also a trend toward non-union shops paying welfare in one form or another. These plans usually include all employees — both shop and office.

Tell How to Join Copper Sheets

One good way to install copper sheets on a metal roof was demonstrated in a color movie shown by Charles E. Sperlik and Richard C. Baynes, Revere Copper and Brass Co. The movie pointed out the results of laboratory tests to determine the right shape, size, and gage of copper to use for copper gutters. From the results of these tests, tables have been devised that will aid the sheet metal roofing contractor to determine how and where to locate expansion joints. The film also explained the behavior of copper sheets under stress due to expansion and contraction. It showed that failures occurred when buckles appeared at points of angular bends. It seemed the number of failures was more frequent with light gage soft copper than with heavy gage, cold rolled sheet copper. Best results were obtained with 32 oz sheets, but it was shown that 24 oz cold rolled copper sheets could be used satisfactorily for many applications provided that proper mechanical provisions were made to allow for movement of the metal under changes in temperatures that occur daily.

Seams at end joints should possess strength equal to that of the sheets themselves. In gutter linings of heavy copper having greater strength than a good soldered seam, the sheets should be riveted together to develop proper joint efficiency.

Sheets to be locked and soldered together should have edges on both sides of the sheet pre-tinned with solder before the locks are formed. This insures an efficient joining with enough strength to withstand stresses. Tests indicated that it will require approximately 2800 lb per sq in. stress pressure to separate a pre-tinned joint, whereas a 1700 lb per sq in. stress pressure would separate a joint that was not pre-tinned. This is due to the failure of solder to completely fill the joint when ordinary soldering practices are applied to the seam.

Accident Prevention Program Effective

The safety committee's report was given by William C. Schmitt, Jr., Rochester, who pointed out that 1953 was a good year in respect to reduction in accident cases. This, he said, resulted from an intensive accident prevention program that was put into effect during the latter part of 1952. Charts and graphs showed that the loss ratio to the amount of premium paid for 1951 was 60.4 per cent. This decreased in 1952 to 53.7 per cent, and in 1953 to 30 per cent. With the reduction in the loss ratio, the dividend percentages increased from 22.5 per cent in 1951 to 32.5 in 1953. Also, the cost per accident was reduced, being $183.00 in 1951, $173.00 in 1952, and $137.00 in 1953.

Three rules were given for reducing the number of accidents: 1) teach safety, 2) practice safety, and 3) enforce safety.

Show How Terne Metal Roofing is Applied

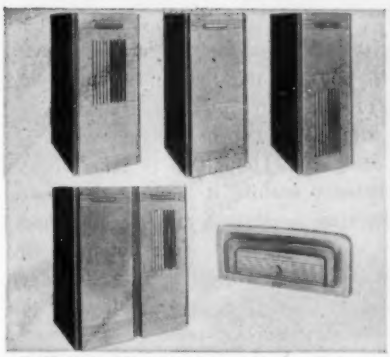
Recent developments in the use of machines has reduced the time required to install terne metal roofs. There are three essential steps in this mechanized procedure — the forming of the pan in a pan forming machine, the fastening of the pan to the wooden roof deck with a stapling machine and the forming of the seam with

(*Please turn to page* 146)

HOME HEATING and COOLING

6 REASONS why G-E is your Franchise with a Future

Now is the time to get into home air conditioning...
and a G-E franchise can put you on the road to profits!



MOST COMPLETE LINE of furnaces, boilers and cooling units in the business. Over 220 different year-round air conditioners from a few basic units! And G. E.'s *Air-Wall** System gives you a big selling plus!

FACTORY TRAINING for your own men right in the G-E factory school in application, service and sales for the entire G-E line. When you start off your dealership, you'll already be an "old hand" at the game!

NATIONAL ADVERTISING by G. E. pulls in prospects, boosts your prestige. Over 10,000,000 people will be reading G-E Home Heating and Cooling ads this year—thousands of them right in your area!

SALES PROMOTION SUPPORT by G. E. offers power-packed selling aids that help seek out prospects and sell those who "just can't make up their minds." G-E ad mats, literature, displays and signs clinch sales!

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Company .....

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City ..... County ..... State .....

DEDUCTIBLE BUSINESS COSTS —

(*Continued from page 70*)

these loans aggregated $20,523.92. This sum the company repaid to the salesmen at the death of the borrower, with the approval of the board of directors, for the protection of the good will of the corporation.

The amount was deducted from the gross income of the corporation and the deduction sanctioned by the federal appellate court, which said:

"The payment was an outlay to retain the existing good will, that is, to prevent the loss of earnings that might result from destroying such good will by failing to recognize the company's moral obligation. Moreover we do not think that under the circumstances of the present case the expenditure was extraordinary. It was the kind of outlay which we believe many corporations would make and have made under similar circumstances.

"According to the ways of conduct and the forms of speech prevailing in the business world, we believe that payment by a company of loans made by its employees to its president under whom they work and who proved to be insolvent is an ordinary and necessary expense of the business when the directors in good faith and with good reason authorize the payments for the purpose of preserving the loyalty of employees and the good will of the customers."

Not All Good Will Payments Deductible

In the deduction of payments to stimulate or foster good will, however, there is a well defined boundary beyond which the courts have refused to extend their approval.

The sum of $525,000 was paid by a nationally known manufacturer to a competitor, in consideration of the discontinuance of the use of a trade name. In denying to the company the right to the deduction of this payment as an ordinary and necessary expense the court said:

"The expenditure was made to eliminate competition for many years to come and cannot be considered as a business expense in the same class as wages, salaries, costs of material, etc. It should be considered as an expense of capital in the acquisition of a capital asset."

In another incident of this character, the taxpayer, to maintain the good will of his trade, settled in full outstanding obligations of $130,000 that had been compromised in insolvency proceedings. The court, in allowing the deduction of this amount as an ordinary and necessary expense, said:

"It is clear that Congress intended the statute to be broadly construed in favor of business generally so that any necessary expense not actually a capital investment, incurred in good faith in a particular business is to be considered an ordinary expense of that business — this in fact is the construction given by the Treasury Department to the statute.

"While the Treasury Department has held as a general rule that only expenditures commonly recognized as operating expenses are deductible, the rule has been applied with great liberality and practically any reasonable expenditure that has benefitted the business has been allowed to be deducted as an expense.

"Of course each case depends for decision on its own facts and it would be impossible to formulate a uniform rule to cover all cases. Generally speaking business men should be free to exercise their ingenuity in devising methods of increasing business. This redounds to the benefit of the government by creating more taxable income."

Base Decisions on Norms of Conduct

Two years after this decision was rendered, however, the Supreme Court said of the principles underlying the interpretation of this provision of the income tax law, in reference to unusual expense payments:

"Now, what is ordinary? Though there must always be a strain of constancy within, it is none the less a variable affected by time and place and circumstances. 'Ordinary expenses,' in this context, does not mean the habitual or normal in the sense that the same taxpayer will have to make them often. A lawsuit affecting the safety of a business may happen once in a lifetime. Nonetheless, the expense is an ordinary one because we know from experience that payments for such a purpose — whether the amount is large or small — are the common and accepted means of defense against attacks.

"The situation is unique in the life of the individual affected but not in the life of the group — the community of which he is a part. At such times there are norms of conduct that help to stabilize our judgment and make it certain and objective.

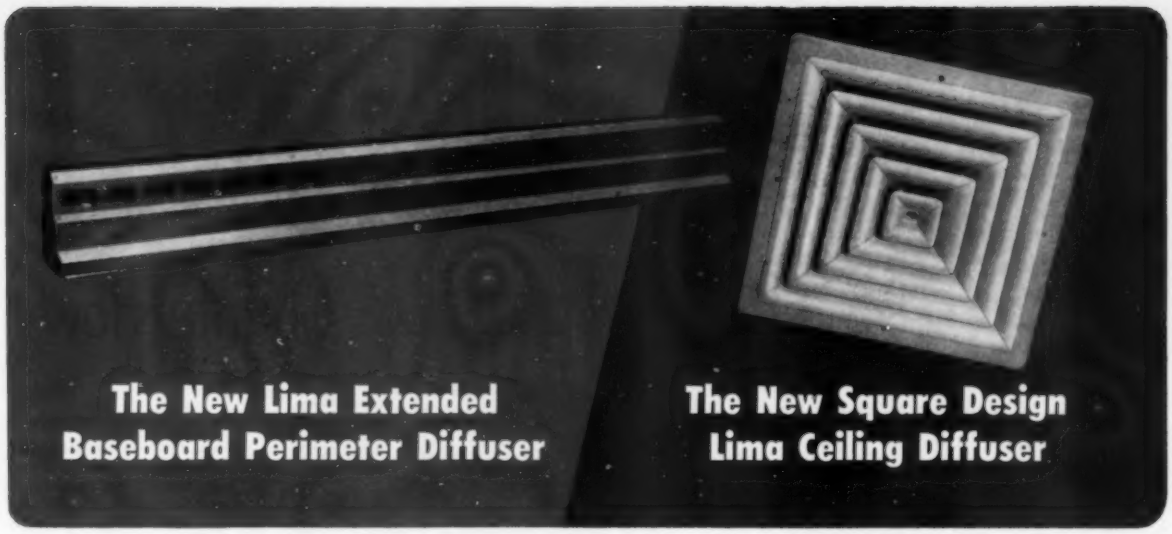
"The instance is not erratic but is brought within the known type. We try to classify this act as ordinary or the opposite and the norms of conduct fail us. No longer can we have recourse to any event of business experience or to any business practice.

"Men do at times pay debts of others without legal obligation imposed by the usages of trade or by neighborly amenities, but they do not do so ordinarily, not even though the result may be to heighten their reputation for generosity and opulence.

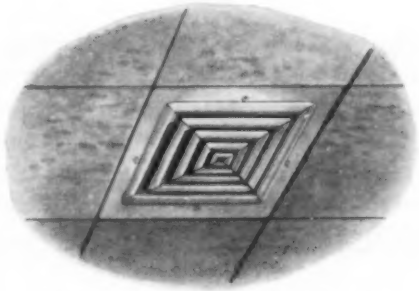
"Indeed if the language is to be read in its natural and common meaning we should have to say that payment in such circumstances, instead of being ordinary, is in a high degree extraordinary. There is nothing ordinary in the stimulus evoking it and none in the response. Here indeed, as so often in other branches of the law, decisive distinctions are those of degree and not of kind.

"One struggles in vain for any verbal formula that will supply a ready touchstone. The standard set by the statute is not a rule of law, it is rather a way of life. Life in all its fulness must answer the riddle."

[*Note: While this discussion applies to actual cases, it should be remembered that legal rules vary in different states.*]



Beautifully styled and easy to install, this new Lima extended baseboard perimeter diffuser delivers air upward and outward at reasonably high velocity at proper angles for peak efficiency. Aspirating effect pulls air from within room toward outer walls without being noticed. In a new house, unit is set about ¾" into wall with little protrusion beyond baseboard. Face is removable. In remodeling work unit butts up against wall or baseboard.



See how this modern square design harmonizes with rectangular rooms and square block ceilings. Series of step-down vanes discharge air outward and slightly downward in all directions without drafts. Recommended for return air — especially in perimeter installations — eliminating large, unsightly grilles. Damper delivers air through full center opening for more complete 4-way diffusion.

2 new diffusers in the Lima quality line

Again Lima leads the way with advanced styling and engineering in perimeter diffusers for more attractive installations and more effective air diffusion in heating or cooling . . . remodeling or new house construction.

The new Lima Extended Baseboard Perimeter Diffuser is smartly attractive and blends beautifully with any baseboard. Assures effective air diffusion without drafts . . . will handle any standard perimeter installation for heating or cooling. Exclusive mechanical built-in damper has set screw control adjustment at the face. Standard four foot and two foot sizes will be available for March delivery.

The new Square Design Lima Ceiling Diffuser gives greater free area with full center damper opening. Damper closes tightly for full heat shut-off. Exclusive "balancing bell" feature simplifies balancing and puts volume control right in the diffuser. Modern light beige actual finish. Immediate delivery in six sizes.

See your local Lima jobber or write direct for complete details, and a copy of the new Lima catalog.

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Floor Diffuser

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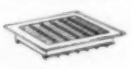

Floor Register

nationally advertised to architects and builders

New Counterflow Is Tops For Basementless Houses

Compact Heil Unit Easily Installed In Closets For Floor Or Perimeter Heat

Latest addition to the comprehensive and soundly engineered line of Heil automatic heating is the new counterflow unit, specially designed to provide efficient downward circulation of warm air for the popular basementless or slab-type homes.

The counterflow principle is the reverse of conventional warm air furnaces in that the heated air is forced downward and discharged at the base of the furnace for perimeter or floor panel heat distributing systems.

Unusually compact for a furnace with its output, the new counterflow unit occupies scarcely more than a two-square-foot floor area and is easily installed in a closet, alcove, or utility room. It is small enough to move through a standard door frame without dismantling. Base design makes it simple to clamp the plenum between the furnace and the floor with an air-tight seal. Proper clearance between the plenum and combustible flooring material is automatically provided! If crawl space is provided below the floor, the plenum and ductwork may be mounted beneath.

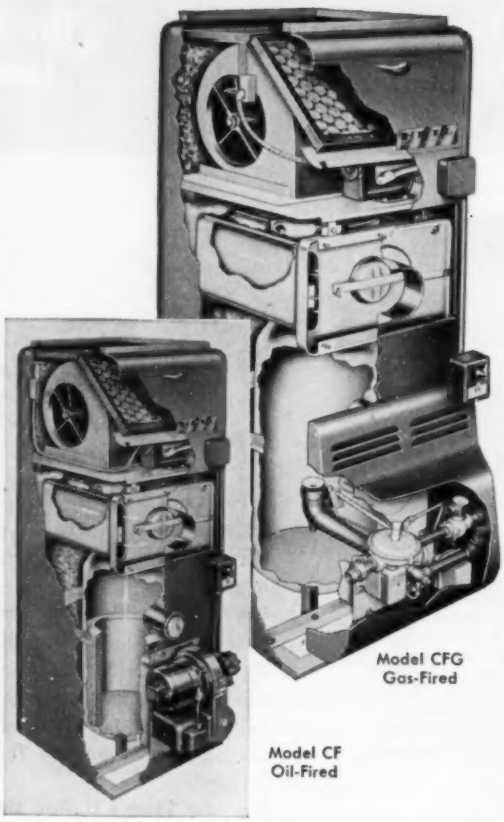
Quiet Performance

Several important factors contribute to the unusually quiet operation of the Heil counterflow furnace. The blower is mounted directly on the heat exchanger rather than to the side walls to eliminate casing or jacket vibration. Foil-faced spun glass insulation is used as a sound absorber as well as for its thermal qualities.

The oversize blower fan can actually "loaf" as it delivers air. It develops high static pressure at slow speeds making it ideally suited for use with small round ductwork.

NEW!

the HEIL Counterflow



Model CFG Gas-Fired

Model CF Oil-Fired

- This new HEIL unit for basementless homes occupies hardly more than a two-foot square . . . can be installed almost anywhere . . . is easier to install than most comparable models.
- You can use this new HEIL Counterflow within one inch of combustible walls. To simplify installation, the base is designed to *automatically* provide proper clearance between plenum and combustible flooring material.
- New "tapered-top" welded alloy Quin-Rad heat exchanger, and five two-direction flue passages give you big-unit efficiency in a closet-size unit. Filters, fan, controls, and burner are easily accessible for quick servicing.
- Gas-fired HEIL Model CFG is AGA approved, and Oil-fired HEIL Model CF bears the Underwriters' label. Both new models are designed and built entirely by HEIL—your assurance of the engineering and construction that have made HEIL famous.

MORE THAN EVER—HEIL'S THE LINE FOR YOU

With the addition of the new Counterflows, the HEIL line provides an oil-fired or gas-fired unit or conversion burner for every warm air or "wet" heat job. You'll find that you can sell HEIL easier, install HEIL faster, service HEIL at less cost. And you'll find that HEIL's exclusive "Dealer First" merchandising program gives you the importance you deserve. See your wholesaler, or write us for details about a HEIL franchise.

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But such a book cannot answer every specific question. In some cases you'll want to talk to one of our representatives. After he is fully informed on your product and the fabricating procedures you use, he'll be able to recommend the most suitable grade of U·S·S Stainless Steel. Or, he may even suggest slight modifications in fabricating procedure that would give you better performance and greater economy.

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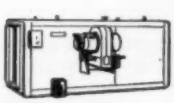

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new horizontal
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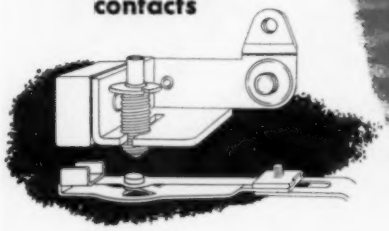
with proven ***Snap-Acting*** contacts



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Sparkling new, the modern beauty of the Penn horizontal room thermostat is *more than "skin deep"*. Under the attractive, pleasing cover, you'll find the time-tested SNAP-ACTING CONTACT structure that is *still the very best* for sturdiness and long-life dependable operation. *This is still the type of contact structure used in highest quality thermostats.*

Another "inner beauty" is *heat-anticipation* . . . the Penn-made magic that stops HOT-n-COLD LIVING. Automatically, it quickly balances heat in-put with heat loss to keep indoor temperature within a half degree of selected level. And that is the kind of heating comfort your prospects want.

Don't settle for less. Specify and install Penn heating controls . . . they'll always deliver the better heating comfort you sell. And that means more sales through more satisfied customers. **Penn Controls, Inc., Goshen, Indiana.** Export Division: 13 E. 40th Street, New York 16, N. Y., U.S.A. In Canada: Penn Controls Limited, Toronto, Ontario.

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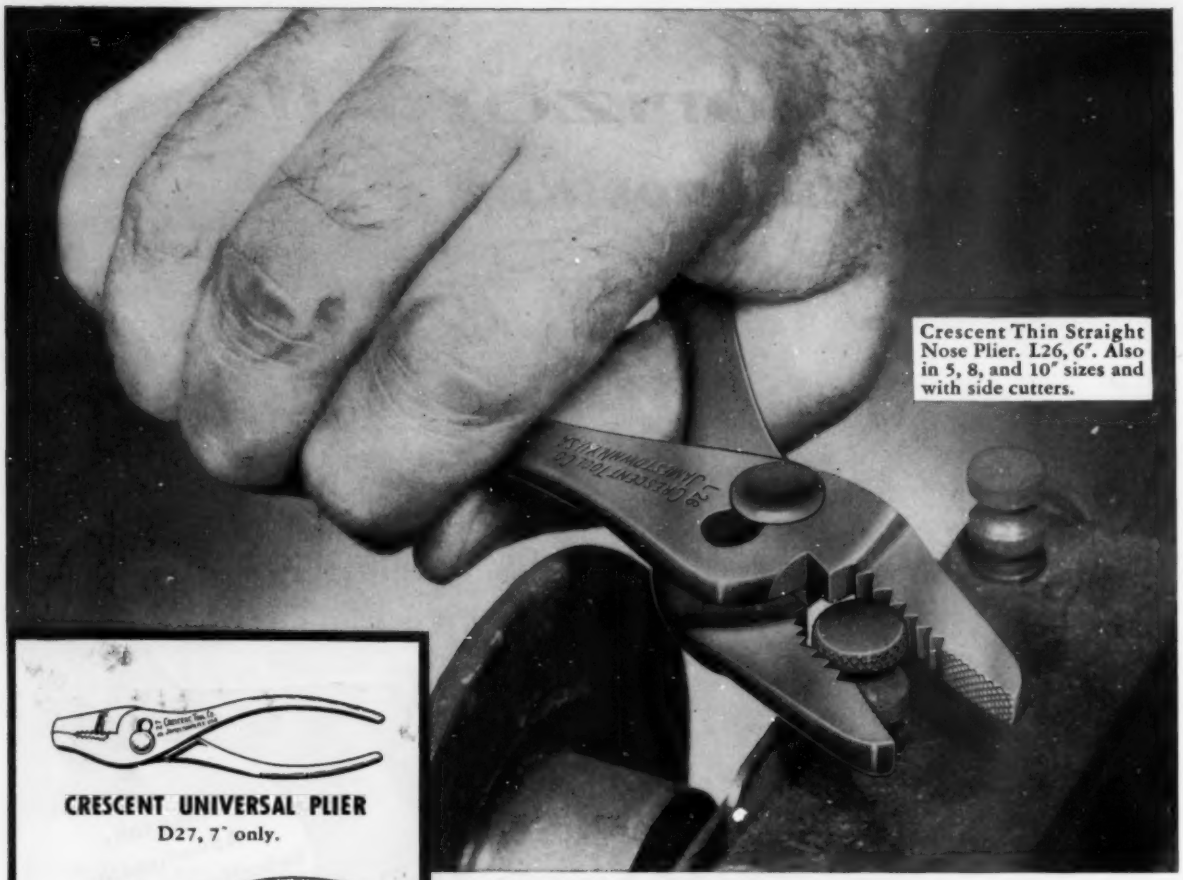

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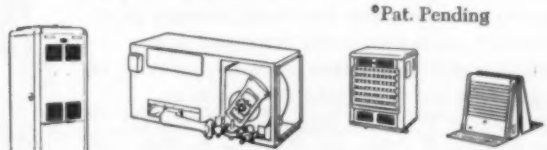

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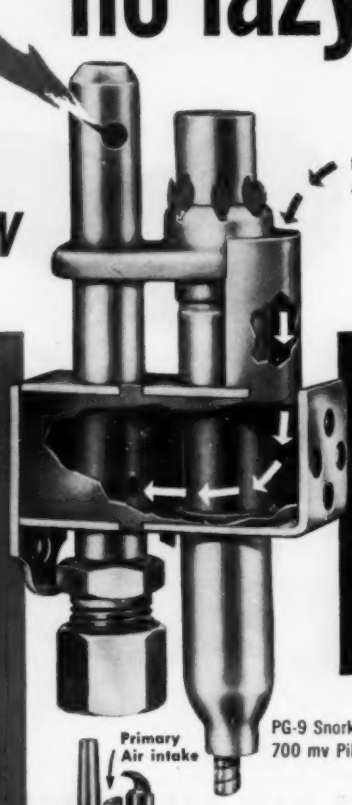

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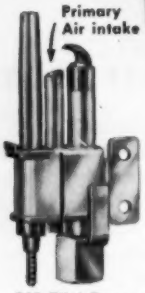
700 mv Pilot Generator

POSITIVE INCINERATOR PRINCIPLE . . .

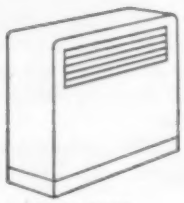
DIRT-FREE PRIMARY AIR THROUGH SNORKEL INSURES BLUE FLAME PILOT STABILITY ON ALL GAS-FIRED APPLIANCES



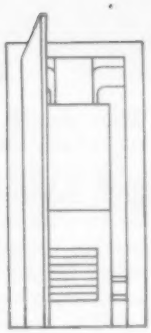
26S Pilot Burner

260S Pilot Burner

General Controls' Snorkel Pilot Burners and Pilot Generators incorporate proven design principle. The primary air passes under pilot flame which incinerates dirt and lint. Elimination of these foreign particles insures a crisp and stable blue flame. Primary air is mixed with gas at pilot orifice in a sealed mixing chamber which is cool, thus preventing cracking of the gas. Pilot and thermopilot flame ports are large diameter to prevent plugging. PG-9 Snorkel Pilot Generators, 260S and 26S Pilot Burners are available for all General Controls thermocouple-operated safety and self-powered control systems.



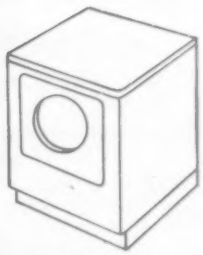
CONSOLE HEATER



CLOSET HEATER

IDEAL FOR ABOVE-THE-FLOOR INSTALLATIONS

WALL HEATER



CLOTHES DRYER

GENERAL CONTROLS

PLANTS IN: GLENDALE, CALIF., BURBANK, CALIF., SKOKIE, ILL.
FACTORY BRANCHES IN 37 PRINCIPAL CITIES
SEE YOUR CLASSIFIED TELEPHONE DIRECTORY

Manufacturers of Automatic Pressure, Temperature, Level and Flow Controls for Heating, Home Appliances, Refrigeration, Industrial and Aircraft Applications.

ARMSTRONG QUALITY

puts money in your pocket

The *extra* money we put into Armstrong furnaces bears dividends for *you.*

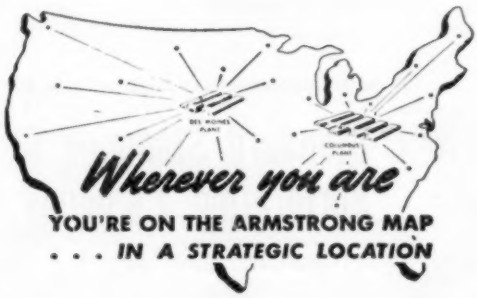
You can figure *gross* profit at the end of the day you sell any furnace. But it's in your annual figures that the real profit — the *net* — shows up. The *net* profit is the money you put in your pocket. The *gross* melts away fast when you have installation troubles, when assembly time is long, when free adjustment and service are excessive, and when deterioration is rapid.

What *is* quality? Much of it is hidden. You never really see it; it has to prove itself. And it does, in Armstrong furnaces. It shows up in durability, in efficient operation, in complete customer satisfaction. Its value comes back to you by reducing your costs *after* the sale — the costs which cut your *net* profit.

For instance, why does the Armstrong finish hold up so well? For a number of reasons. After cabinet panels are formed, the metal is thoroughly heat-cleaned to provide a surface which "grips" the enamel — leaves no cracks or pin-holes. Then enamel is sprayed on both sides (not just the side your customer sees), and baked on. Then the finished job is critically inspected. That type of care is used in every step of the manufacture of every Armstrong furnace.

Yes, it's costly to us . . . but it's profitable to you.

Armstrong distribution, too, is designed with dealer profit as a keystone. Ask your nearby Armstrong wholesaler for as pretty a profit picture as you'll ever see.



YOU'RE ON THE ARMSTRONG MAP . . . IN A STRATEGIC LOCATION

Armstrong's two huge plants serve both sides of the continent quickly, economically. A warehousing distributor, with a complete Armstrong inventory, is within a stone's throw of everywhere. Wherever you are, Armstrong's distribution system is set up to serve you. It's better, qu'cker, more profitable . . . for you.

Please address Dept. AA at our plant nearest you.

ARMSTRONG FURNACE COMPANY

COLUMBUS, OHIO — **DES MOINES, IOWA**

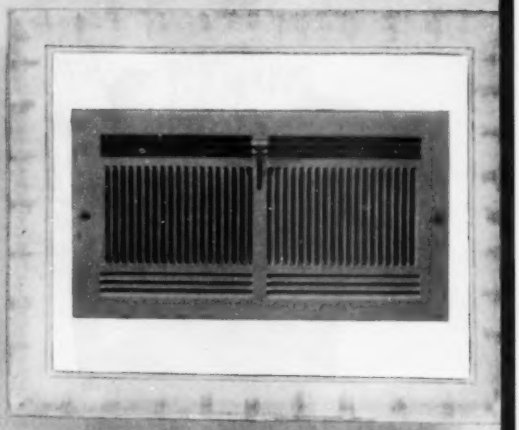
Warm-Air Furnaces—Gas, Oil, Coal—A Complete Line

comfort in modern living

Barometers may rise and fall . . . but
indoor comfort will remain constant if you use

Standard's model 551 perimeter wall register

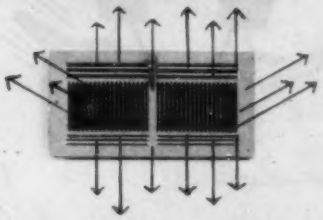
Standard's new perimeter Wall register gives 4 way diffusion along the outer cold walls for balanced warm air circulation. Standard's exclusive, new Fractionator Volume Control means one-time setting for positive air control. When you use Standard Perimeter Wall or Baseboard registers you are giving complete hemispheric heating and cooling comfort.



features.

- new fractionator volume control
- metallic finish
- standard screw holes
- single shutter control
- smart appearance
- for sidewall installation

4-way diffusion for balanced air circulation



write today for complete catalog to

Standard Stamping & Perforating Company

3137 west 49th place
chicago 32, illinois

When you sell CHRYSLER AIRTEMP
you've got something extra to sell with . . .

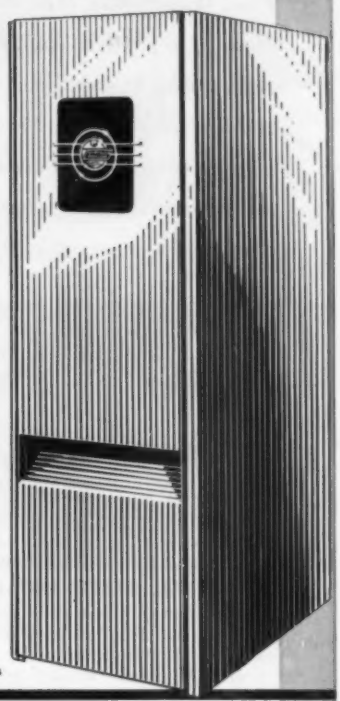
Features that make CHRYSLER AIRTEMP

EASIER TO INSTALL

can make more money for you!

Chrysler Airtemp Furnaces are shipped to you factory-tested and completely assembled—wiring in place, burners in place. Their amazing compactness means that you can move crated units through standard doors without trouble—make installations in tight quarters with less inconvenience. And your installations are further simplified by the front location of the flue outlet.

Easier installation with Chrysler Airtemp Furnaces saves costly man-hours which you can use to handle more business. An important advantage, certainly . . . but here is just one of so many extras you sell with when you sell Chrysler Airtemp! Seven of these extras are listed below. Check each one—then mail convenient coupon for all of the details of the best "dealer's deal" you can find anywhere.



New Hi-Boy Furnace—in gas and oil-fired models

Judge for yourself! Won't these additional extras make your selling job easier—as a **Chrysler Airtemp Dealer?**

Consumer Confidence—People know and respect the Chrysler Airtemp name—associate it with engineering leadership—have complete confidence in the products which carry it.

Double Profit Opportunity—Chrysler Airtemp Air Conditioners, which are so easy to install with the new Chrysler Airtemp Furnaces, give you the chance to sell Year 'Round Air Conditioning when you install the furnace or later—for a double profit.

Product Leadership—All-new Chrysler Airtemp Furnaces give you exclusive features that you can demonstrate to your prospects in terms of more efficient, more economical automatic heating.

5-Year Warranty on new, super-efficient, corrugated-design heat exchanger gives your customers important additional confidence in their choice of Chrysler Airtemp.

Smarter Modern Styling—All-new Chrysler Airtemp models feature new smarter modern styling—with plenty of eye appeal for homeowners.

More National Advertising to consumers and builders in leading publications is steadily preselling prospects on Chrysler Airtemp Heating and Air Conditioning, including many of the best prospects in your own trading area.

More Local Selling Helps—Chrysler Airtemp gives you a broad choice of tested and proved selling helps designed to work for you in your own market over your own name. New 20-minute full-color movie makes a terrific impression on every viewer!

New Lo-Boy Furnace—in gas and oil-fired models

CHRYSLER AIRTEMP

HEATING • AIR CONDITIONING

for homes, business, industry

Airtemp Division, Chrysler Corporation, Dayton 1, Ohio

AA-2-54

Airtemp Division, Chrysler Corporation
P.O. Box 1037, Dayton 1, Ohio

Guaranteed by Good Housekeeping

Please send us complete details concerning the Chrysler Airtemp Franchise.

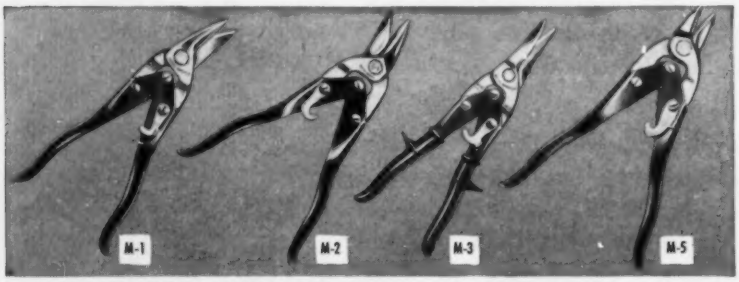
Name_____

Address_____ Phone_____

City_____ Zone____ State_____

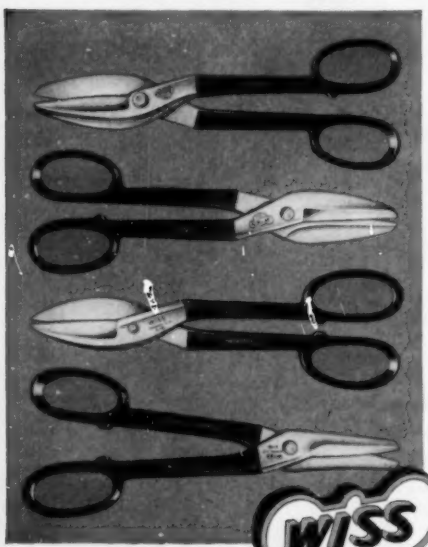
"WISS SNIPS MAKE TOUGH JOBS EASY"

Fred Woodhouse, sheet metal foreman employed by the W. L. Bodey Co., of Reading, Pa., sums up in a few words one big reason why he uses Wiss metal cutting snips. There are several reasons why they are the choice of professional workers everywhere—why they sell better, with fewer returns. Wiss snips are produced largely by the handwork of skilled workers. Each pair is rigidly tested and guaranteed perfect. Bolts are set precisely to reduce wear and to increase cutting power with least effort.



WISS METAL MASTER SNIPS: Compound action design delivers amazing cutting power. These 10" snips cut with about one-half the effort required for standard 12½" snips. One edge serrated to prevent slipping. M-1 (cuts left) and M-2 (cuts right) are designed to cut the most intricate scrolls and circles. M-3 is for shallow arcs and straight cutting. M-5 Bulldog Heavy Duty snips are tops for notching, nibbling and cutting shallow arcs in sheet metal as heavy as 16 gauge.

Wiss inlaid blades are made of high carbon crucible steel welded to a hot drop-forged frame to provide the extra service demanded by professional workers.



WISS INLAID SNIPS

High carbon crucible steel welded to a hot drop-forged frame provides that *extra* service demanded by professional users everywhere. Six Straight Cutting sizes from 11½" to 17", including Bulldog Snips for notching. Three Combination* Cutting sizes, 12½", 13½" and 14½".

WISS SOLID STEEL SNIPS

For those whose requirements are less specialized than the professional user. Hot drop-forged of fine carbon steel, they meet or exceed government specifications. Four straight cutting sizes, 8" to 12½". Four Combination* Cutting sizes, 7", 10", 13" and 16" Bulldog Snips for notching.

*Made with straight blades, but ground and shaped so they readily cut curves and irregular shapes as well as straight.

J. WISS & SONS CO., NEWARK 7, NEW JERSEY

Manufacturers of Shears, Scissors, Pinking Shears, Metal Cutting Snips and Garden Shears

Wiss snips are hot drop-forged of the finest steels available.

Highly skilled craftsmen make final adjustments to assure that Wiss snips will cut perfectly for a long time.

You can rely on **Rheem**

ROOM AIR CONDITIONERS

A Great New Product with a Famous Name!

For Sure Summer Profits, Mail this Coupon *NOW!*

MOUNTAIN-COOL COMFORT

at your fingertips—

COOL AIR . . . adjusts to your customer's liking!

DRY, SOFT AIR . . . no high humidity!

FRESH OUTDOOR AIR . . . comes indoors cool!

FILTERED AIR . . . no dust or pollen!

ODOR-FREE AIR . . . no smoke, no odors!

SEND THIS COUPON TO YOUR NEAREST RHEEM SALES OFFICE:

RHEEM MANUFACTURING COMPANY

7600 South Kedzie Avenue, Chicago 29, Illinois
1025 Lockwood Drive, Houston 20, Texas
Sparrows Point 19, Maryland
4361 Firestone Blvd., South Gate, Calif.
800 Chesley Ave., Richmond, Calif.
3693 E. Marginal Way, Seattle, Wash.

World's Largest Manufacturer of Automatic Storage Water Heaters.
World's Fastest Growing Manufacturer of Warm-Air Heating Equipment.

SIRS:

I know that "you can rely on Rheem". I know your reputation as makers of the best. So please send me—for my consideration now, before the selling season starts—full information on your new Rheem Room Air Conditioner.

I understand that this product has *no superior* in its sales and performance features. That it is Performance-Tested at your factory and carries a 5-Year Warranty. That it is priced attractively, and very profitable. That it is easily installed in living room, bedroom, kitchen or office.

So please send me COMPLETE INFORMATION now on your product, your advertising, and your profits for me!

NAME_____

ADDRESS_____

CITY_____ STATE_____

NOW!
VENTING MADE EASIER
with NEW
WV METALBESTOS

NEW EASY-TO-INSTALL GAS VENT PIPE

- Listed by Underwriters' Laboratories as **both** a Type B and Type BW gas vent pipe.

- Sturdy, durable, safer **galvanized steel** outer pipe gives maximum protection to fast-heating, corrosion-resistant inner pipe.
- Specially designed for "in-the-wall" venting.

- New Fastloc double-lock, **double-safe** coupling gives visible proof of safe, permanent connection — **you can see it lock into place.**
- Reinforced ends protect against damage in handling.
- Easy-to-connect pipe sections — no forcing.
- Can be unlocked easily during installation if necessary — may be cut easily to desired length.

- Convenient, complete **BW Installation Kit** with new WV Metalbestos permits **officially correct** venting of recessed gas heaters.

- Complete line of fittings.

ANOTHER FIRST BY METALBESTOS
— leader in gas venting.

For illustrated price sheet and your copy of "How to Install Type BW Gas Vents," write today to Dept. B-1508

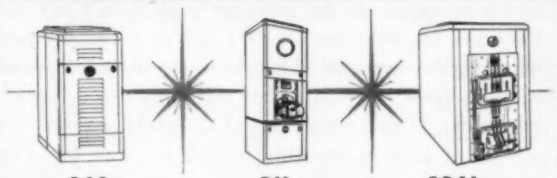
METALBESTOS DIVISION
WILLIAM WALLACE COMPANY • BELMONT, CALIF.

Like fine diamonds . . . **PEERLESS** enjoys that little *extra!*

"Pride of Ownership"

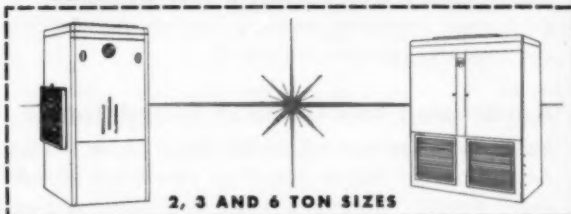
WINTER AIR CONDITIONING SUMMER AIR CONDITIONING

VERSAT-ALL
WINTER AIR CONDITIONING UNITS



GAS OIL COAL

VERSAT-AIR
SUMMER AIR CONDITIONING UNITS



2, 3 AND 6 TON SIZES

WATCH FOR BIG ANNOUNCEMENT SOON —IT'S REALLY BIG!

A really fine diamond carries with it that built-in desire to "show it off". The high-quality reputation of Peerless heating and cooling equipment has been earned through over a half-century of scientific heating research and manufacturing "know-how".

When you tell your customers of Peerless quality, you can do so without hesitation because the equipment "delivers" that which you sell. The Peerless line . . . a most complete line of winter and summer air conditioning . . . will build profits for you, too. Write today.

PEERLESS

Peerless Furnace & Foundry, Inc., 1853 Ludlow Ave., Indianapolis 7, Ind.
Please send complete information on your complete line of air conditioning equipment.

Name_____

Address_____

City_____ State_____

Purdue Short Course to Start March 3

B. F. McLouth

L. G. Miller

BRUCE F. MCLOUTH, chairman of the College Short Course Committee of the National Warm Air Heating and Air Conditioning Association, has announced the dates and programs for the Purdue University warm air heating course.

Merle M. McClure, assistant director, Division of Adult Education, Purdue University, is in charge of the four day program, which begins March 3. He reports the advance registration is well over 100 heating and cooling men from Indiana and Illinois.

Instruction will be given by well-known members of the warm air heating industry and by the staff of Purdue University. Among those scheduled to address the dealers are:

Dean Lorin G. Miller — school house heating with warm air.

Frederick B. Morse — the theory of heat loss.

Clarence L. Grandstaff — how to design a small pipe heating system.

William C. DeRoo — locating registers to meet the need of the air distribution for a specific job.

William T. Miller — combustion and how to increase its efficiency.

H. G. Veneman — the refrigeration cycle and summer cooling for residences.

Robert J. Waalkes — space heating with unit heaters.

Joe Livi — how to analyze profit and loss statements.

Ward Brundage, Charles Buck, William Garber, Al Marble, Walter Martin, Walter Stiles and Ross Wallis will aid in solving classroom problems on heating a small residence with a basement, heating and cooling a residence, and heating and cooling a commercial type building having a heat loss exceeding 250,000 Btu per hr.

Manuals and plans will be supplied by the Short Course Committee and will be included in the registration fee of $25.00. Lodging and meals will be made available at the campus. For full details, write Merle M. McClure, Purdue University, Lafayette, Ind., or American Artisan.

Michigan Program Plans Completed

MEMBERS OF THE MICHIGAN Heating & Sheet Metal Association may look forward to a number of interesting and informative sessions at their forthcoming convention. Homer Brundage, chairman of the convention committee, has arranged a diversified program for the event, with speakers scheduled to discuss such subjects as selling, servicing, accounting, estimating, and other phases of contracting. The convention will be held February 24 and 25 at the Pantlind Hotel, Grand Rapids.

Georgia Contractors Hear Talk on Credit

THE ROOFING AND SHEET METAL Contractors Association of Georgia held its winter business meeting at the Henry Grady Hotel, Atlanta. Prior to the opening of the business meeting, two features were presented: a tax forum, during which the Georgia sales tax as it applies to sheet metal contractors was discussed, and an address by E. S. Egge, district manager, Allied Building Credits, Inc., on the outlook for credit financing in 1954. Mr. Egge pointed to the opportunities for business provided by the modernization and repair market, and advised his audience to be ready to take a full share of this business by providing a way for customers to pay for such work on an installment basis. He detailed two plans offered by his company, one for financing work up to $1000 and the other for work over $1000 and up to $2500, both affording the contractor the opportunity of handling work with no down payment and a maximum of 36 monthly payments. "Upon completion of the work," he said, "the contractor is paid the full contract price of the work without recourse, and the property owner then liquidates the obligation directly with Allied Building Credits."

The regular business meeting was opened with a stewardship report given by I. C. Mock, president, following which reports were heard from the chairmen of the finance, legislative, suppliers relations, membership, and architects relations committees.

Advertising Talk Given at Grand Rapids

AT THE JANUARY MEETING of the Grand Rapids Heating Association the dealers agreed to consolidate all telephone directory advertising under the heading of *Heating Contractors* instead of the heading previously used which was *Furnace Dealers*. It is the desire of the association to be known as heating contractors because it feels that the term "contractor" indicates to the public more fully the scope of the services offered.

A. W. Honecker, secretary of the association, reported

Coming Events

Feb. 22-24 — Ohio Sheet Metal Contractors Association, Annual Convention. Deshler-Hilton Hotel, Columbus. William C. Lumm, Secretary, 2512 Albion St., Toledo 6.

Feb. 22-25 — Third Annual Industrial Ventilation Conference. Kellogg Center, Michigan State College, East Lansing, Mich. James C. Barrett, Michigan State College, Lansing 4, Mich.

Feb. 24-25 — Michigan Heating and Sheet Metal Association, Annual Convention. Pantlind Hotel, Grand Rapids. N. J. Biddle, Secretary, 3035 E. Grand Blvd., Detroit 2.

Feb. 25-26 — Cincinnati Indoor Comfort Conference. C. T. Pfirrmann, Chairman, 3500 Madison Rd., Oakley 9, O.

March 1-2 — Columbus Indoor Comfort Conference. Newt T. Hess, Chairman, 63 E. Goodale St., Columbus 8, O.

March 4-5 — Pittsburgh Indoor Comfort Conference. Louis F. Demmler, Chairman, 100-108 Ross St., Pittsburgh 19.

March 8-9 — Harrisburg Indoor Comfort Conference. Larry Yost, Chairman, 4300 Paxton St., Harrisburg.

March 8-10 — Sheet Metal Contractors Assn. of Wisconsin, Inc., Annual Convention. Schroeder Hotel, Milwaukee. Irv. Kanitz, Secretary, 225 E. Michigan St., Milwaukee.

March 11-12 — Philadelphia Indoor Comfort Conference. Alan Kirby, Chairman, 229-237 Arch St., Philadelphia 6.

March 15-16 — Raleigh Indoor Comfort Conference. H. L. Goodwin, Chairman, P. O. Box 1050, Durham, N. C.

March 19-20 — Birmingham Indoor Comfort Conference. Geo. F. Wheelock, Chairman, 3017-25 2nd Ave., S., Birmingham 5.

March 29-30 — Milwaukee Indoor Comfort Conference. F. J. Engler, Chairman, 323 W. Juneau Ave., Milwaukee 8.

April 2-3 — Sheet Metal, Air Conditioning and Roofing Contractors' Association of Pennsylvania, Annual Convention. Berkshire Hotel, Reading. E. W. Liebermann, Secretary, 1411 Merchant St., Ambridge, Pa.

April 20-22 — Sheet Metal Contractors Association of Illinois, Inc., Annual Convention. Abraham Lincoln Hotel, Springfield. E. A. Schmidt, Secretary, 1210 E. Laurel St., Springfield.

May 10-12 — Sheet Metal Contractors National Association, 11th Annual Convention. William Penn Hotel, Pittsburgh. J. D. Wilder, Executive Secretary, 170 Division St., Elgin, Ill.

May 16-20 — Oil Heat Exposition sponsored by Oil-Heat Institute, Commercial Museum, Philadelphia. R. H. L. Becker, Managing Director, 500 5th Ave., New York 36.

June 10-12 — Roofing and Sheet Metal Contractors Association of Georgia, Annual Convention. General Oglethorpe Hotel, Savannah, Ga. B. L. Noblitt, Secretary, P. O. Box 1196, Augusta.

the temporary suspension, by city officials, of the ordinance that required heating contractors to pay an annual fee for a license to sell used equipment. He said it is now felt that the new city heating code and its accompanying license fee outdates the need for heating contractors to comply with the old ordinance.

The speaker of the evening, Clyde M. Barnes, editor of American Artisan, told the dealers that operating a business without advertising is like "winking at a girl in the dark — you know what you are doing, but no one else does." Using this example as a theme, Mr. Barnes gave many suggestions about the value of advertising and pointed out how it had helped heating dealers throughout the country.

Tells Benefits of NWAHACA Membership

CITING THE ADVANTAGES of membership in the National Warm Air Heating and Air Conditioning Association, a recent circular mailed by the Canadian chapter points to the training program which makes members and their employees eligible for any of the Indoor Comfort Schools held each year, the consumer education program which keeps the press informed on warm air heating, and other services, such as low rates on all manuals and technical material published by the association.

Basic training courses being offered at this year's indoor comfort conferences deal with such subjects as heat and heat losses, gravity system design, and furnace room ventilation. Advanced schools cover perimeter heating, size and location of chimneys, job estimating, and large winter air conditioning systems.

That the schools are being enthusiastically accepted by manufacturers as well as dealers is evidenced by the following letter received by the association from the manager of a furnace manufacturing company:

"We have watched, with great interest, in recent years the development of your training schools. When they were started initially, we felt that it was a great step forward for the industry. Now we know that this is true. I know of no development which has done so much to improve the technical ability of warm air heating contractors across the country as the schools you have held.

"In recent years our industry has gone far in improving the

(*Please turn to page* 118)

Servel A/C Line Expanded

New PRODUCTS! MARKETS! PROFITS!

NEW! **"Add-on" absorption cooling units for use with existing gas furnaces!**

NEW! **Electric package air conditioners in 3-, 5-, and 7½-ton capacities!**

NEW! **Room air conditioners including ⅓- and ½-h.p. sizes plus *reverse cycle* ¾- and 1-h.p. models.**

It's a matter of simple fact! Servel dealers can tap every segment of the rich and growing air-conditioning market.

For the residential market there is Servel **Wonderair** *All-Year* air conditioning. Exclusive absorption principle gas-fired units are offered in 2-, 3-, and 5-ton cooling capacities. Oil-fired units also available. And now, the "cooling only" unit expands the market to include homes with gas furnaces.

Commercial prospects can be offered new *electric* package air conditioners, as well as the time-proved absorption units that use waste heat or steam from any source for cooling. These units are also adaptable for add-on home installation.

Industrial needs for air conditioning, process cooling, or special problems of temperature or humidity control find a perfect answer in famous Servel water chillers.

Servel dealers are in a position to make the strongest bid for the business. Write today for franchise details. Servel, Inc., Air Conditioning Division, Evansville 20, Indiana.

Wonderair Room Air Conditioners for every need!

Widest range of models! Lowest prices! Most attractive cabinets! Quietest operation! Check this Servel line-up for complete market coverage:

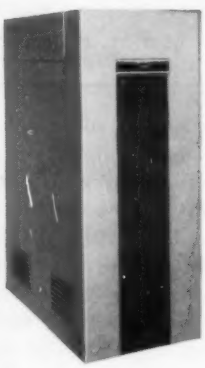
1. Trim ½- and ⅓-h.p. units with exclusive *pull control*. These models fit casement or regular windows.

2. Special economy ¾-h.p. model for straight cooling at lowest cost!

3. *One-dial* control ¾- and 1-h.p. models equipped to cool, ventilate, exhaust!

4. New ¾- and 1-h.p. *reverse cycle* units that cool or heat. Here's the line with biggest profit potential!

"Add-on" cooling: Every home with a modern gas furnace is a prospect! ▶



◀ *New electric package air conditioners plus absorption units give Servel dealers widest selection for commercial prospects.*

Servel

the name to watch for great advances in
AIR CONDITIONING-REFRIGERATION

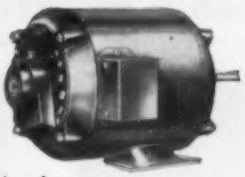
for smooth,
quiet performance
that keeps customers happy

standardize on Century MOTORS

SINGLE PHASE:

Split Phase Induction—⅛, ¼, ½, H.P.
Capacitor—⅛ to 20 H.P.
Repulsion start, brush lifting,
Induction—½, to 7½ H.P.

For unit heaters, attic fans, furnace blowers, window fans, room coolers, circulating pumps, compressors.



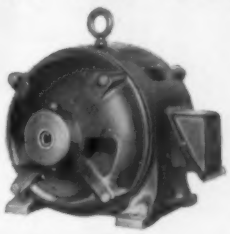
There's a Wide Range of Types and Sizes For All Your Needs

Century Motors are available in all types of protective frames, such as Splashproof for outdoor installations on cooling towers —and Explosion Proof for use in operating rooms where explosive ether is present.

POLYPHASE:

Squirrel Cage Induction—⅛ to 400 H.P.
Wound Rotor Motors—1 to 400 H.P.
Synchronous Motors—20 to 150 H.P.

For compressors, fans, blowers, cooling towers, pumps.

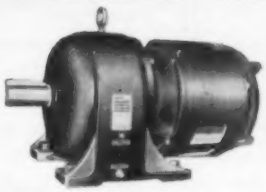


For expert help with your motor problems, consult the Century Branch Office nearest you, or conveniently located Century distributor. A nation-wide network of Century Service Stations is always at your service to give the assistance you need.

DIRECT CURRENT:

⅛ to 300 H.P.

For all applications that require direct current.



GEAR MOTORS:

⅛ to 15 H.P., single, double and triple gear reduction.

Century C MOTORS

CENTURY ELECTRIC COMPANY

1809 PINE STREET • ST. LOUIS 3, MISSOURI

Offices and Stock Points In Principal Cities

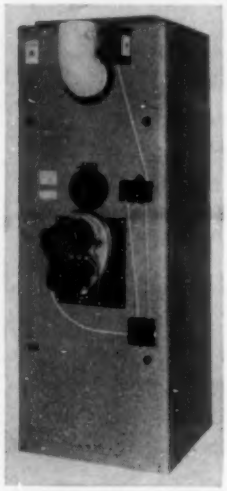
826

EQUIPMENT DEVELOPMENTS

The latest information on manufacturers' developments is presented here with brief summaries of the applications of these products. For new literature giving product information which is available see page 127.

Winter Air Conditioners for Small Homes

FOUR NEW winter air conditioners, two counterflow and two utility units, for installation in small to medium size homes (with or without basements) — Sunbeam Air Conditioner Div., American Radiator & Standard Sanitary Corp., Elyria, Ohio. Each model is available for either gas or oil firing. Burners permit easy conversion from one fuel to the other with no loss in capacity, the company states. Three sizes are available in both types — 76,000, 90,000 and 100,000 Btu per hr at bonnet. The "Winterline" units are used with perimeter heating systems; the "Winterglo" (illustrated) with conventional duct systems. The units are AGA and UL approved, and the utility units are approved for installation on combustible floors.



Above: Air Cleaner

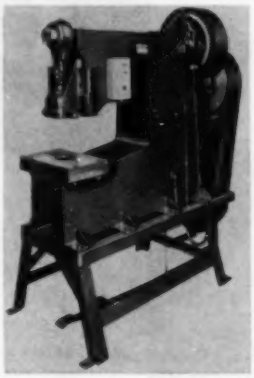
Left: Winter Conditioner

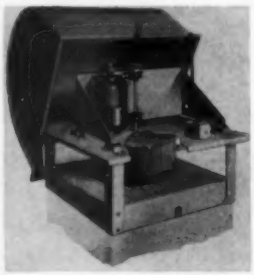
Electrostatic Air Cleaner for Homes

MODEL PH-122 "PRECIPITRON" ceiling suspended electrostatic air cleaner for average sized homes — Westinghouse Electric Corp., Air Conditioning Div., Dept. T-556, 200 Readville St., Hyde Park, Boston 36. Designed for installation in the main return air duct of a forced air heating system, the unit removes 90 per cent of all airborne dust and pollen and is effective against tobacco smoke particles as small as 1/250,000 in. in diameter. Weighing 200 lb, the model is intended to handle from 1000 to 1200 cfm of air. It cleans recirculated as well as make-up air. Water and drain line connections are provided. The electrical requirement is a single outlet on any a-c, 115 volt line.

Power Punch Press

No. 331 40 ton deep throat power punch press — Whitney Metal Tool Co., 91 Forbes St., Rockford, Ill. It has a welded steel frame, pancake type motor, flywheel and gearing located at the rear of the frame, and a supporting structure primarily of large angle iron. Throat depth is 24 in., height of throat, 12 in. The machine operates at 84 strokes per minute, the company states, and maximum die space is 9 in.





Above: Ventilator

Left: Punch Press

Centrifugal Fan Ventilator

REDESIGNED "AIRLIFT" centrifugal fan ventilator — The Swartwout Co., 18511 Euclid Ave., Cleveland 12. There is a new one section hood which lifts on swing hinges in smaller models and is removable in large sizes. The hood covers the motor chamber and directs air exhaust downward for dispersion over the roof. Designed primarily for low noise level duct exhaust, the ventilator is available in 14 sizes and a variety of capacities, at static pressures of from 0 to 7/8 in.

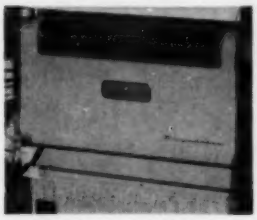
Perimeter Diffuser

PERIMETER DIFFUSER designed to control, direct and diffuse an air stream in such a way as to hold floor to ceiling temperature differential down to a maximum of 2 F — Titus, Inc., 1304 Broadway, Waterloo, Ia. The large free area is intended to lower pressure requirements, making it easy to force cool air high up the wall and to hold the warm air at lower levels. The baffles are so designed that pressure requirements are lower with them installed than without them, the company states. The diffusers are offered in three sizes, but require only one boot size.

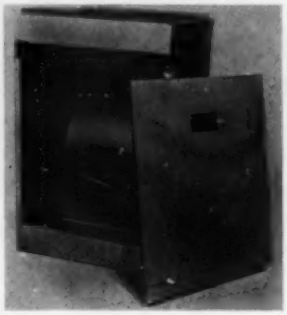
Flush Mounted Window Conditioners

ROOM AIR CONDITIONERS with flush window mounting design — Frigidaire Div., General Motors Corp., Dayton 1. The unit is mounted in the window with only the air delivery and return section of the air conditioner, plus the controls, showing inside the room. Drapes can

be drawn across the front of the unit if desired. A metal "tunnel" surrounds the control section and each side of the unit at that point. The window is then lowered to a sealing flange on top of the tunnel near the front of the conditioner, allowing the unit to be placed farther outside the window while the controls remain accessible. The section of the unit extending outside is braced with a tubular support bar; no bolts or fasteners are required. Sizes available are 1/3, 1/2, 3/4, and 1 hp.



Above: Window Conditioner



Right: Filter Blower Unit

Filter Blower Unit for Conversions

FILTER BLOWER unit for use in converting existing gravity systems to forced warm air — Firewel Co., Inc., 3685 Broadway, Buffalo 25. It can be used with coal, gas or oil fired furnaces and consists of a squirrel type blower with filter. Sold either with or without the motor, the unit is built in 9, 10 and 12 in. sizes.

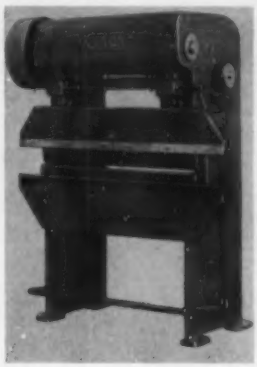
Combustion Chamber

LOW COST 16 in. high "Kolbkast Universal" combustion chamber with a capacity of from 0.75 to 8 gallons — Kolb Refractories Co., Meadow and Jackson Sts., Philadelphia 48. The "Insulating" model is designed for temperatures up to 2100 F, and the "Super Duty" model for temperatures exceeding 2100 F. Both types have a K factor equal to insulating brick, and are designed for either high or low pressure burners, the company states. They are available as a complete package, including the chamber, steel bands and sufficient castable to cast a 1½ in. thick interior base, or packages of runners and door sections can be purchased.

Oil and Gas Lowboy Furnaces

OIL AND GAS lowboy furnaces designed to occupy a minimum of floor space — Williamson Heater Co., 3500 Madison Rd., Cincinnati 9. They are pre-assembled and pre-wired at the factory, and shipped in three (oil fired unit) and two (gas fired unit) packages. The oil burner is the pressure atomizing type, flange mounted with three stud bolts for installation or removal. The gas burner is the upshot, single port type with an orifice plug for natural gas and a blank orifice tagged with drilling instructions for different localities. Warm air sections on both models are insulated with a spun glass and aluminum foil lining. The heat exchanger has 100 per cent primary radiating surface, the manufacturer states. Standard equipment includes the blower, blower motor, variable speed pulley and belt, filter, etc. The oil fired unit is offered in three models, with output capacities ranging from 80,000 to 116,000 Btu. The gas fired unit (shown) is available in models with output capacities of 70,000, 90,000, 110,000 and 140,000 Btu.

Furnace



Press Brake

Standard Press Brakes

TWO STANDARD press brake models available for delivery from stock — Verson Allsteel Press Co., 9300 S. Kenwood Ave., Chicago 19. Model 1062, rated at 25 tons capacity, is designed to bend 78 in. of 16 gage mild steel over a ½ in. die opening. Bed and ram length is 78 in., and the distance between housings is 62 in. Stroke is 2 in. and speed is 40 strokes per minute, the company states. The Model 16-48 (shown), rated at 15 tons capacity, is designed to bend 48 in. of 16 gage mild steel over a ½ in. die opening. Stroke is 2 in. and speed, 20 to 50 strokes per minute, according to the manufacturer.

Aluminum Faced Movable Office Partitions

"REYNOWALL" lightweight insulated movable office partitions, consisting of aluminum faced panels with honeycomb-patterned paper cores and extruded aluminum structural members — Reynolds Metals Co., 2500 S. 3rd St., Louisville. The partitions are designed to be effective as sound barriers and to have good thermal insulation qualities. They are easily adapted to conform to all usual floor, wall and ceiling irregularities, the company states. Panels are embossed in a variety of patterns. The partitions are available for ceiling height (with and without windows), cornice height (with and without windows), and railing height applications.

Evaporative Condensers

IMPROVED SERIES PF, "Perma-Fan," Type C evaporative condensers assembled by a construction process designed to eliminate leakage at joints — Drayer-Hanson, Inc., 3301 Medford St., Los Angeles. The housings are now of 14 gage galvanized steel. Eliminators, which are hot dip galvanized after fabrication, may be serviced without disturbing the duct connections, the company states. Units are equipped with separate direct-connected motor driven pumps, mounted to the units with

(*Please turn to page* 119)

THE NEW *Air Control* #180 PERIMETER DIFFUSER

FOR WINTER HEATING AND SUMMER COOLING IN ALL PERIMETER BASEBOARD INSTALLATIONS

Here is the first perimeter baseboard diffuser with proven customer appeal! Installers who are using the new #180 tell us that customers like its decorator styling . . . like the way it blends into any room. They say it helps to sell the whole heating-cooling system for it's the one part everyone sees.

You can bank on superior performance in any installation. The new #180 is the diffuser that has been especially designed to handle warm air and cool air . . . better. Use it for homes, offices and all commercial jobs.

Available in standard 4 foot and 2 foot lengths. Individual units can be assembled in multiples to form a continuous baseboard along one or more walls.

FOR SIDEWALL INSTALLATIONS, #15
FOR FLOOR INSTALLATIONS, #42

WRITE FOR BULLETIN #104 AC OR SEE YOUR JOBBER

AIR CONTROL PRODUCTS, INC.

DEPT. S COOPERSVILLE, MICHIGAN

NEWS FOR YOUR INDUSTRY....

Libbey·Owens·Ford Announces Super·Fine Fiber·Glass Furnace Insulation

A new line of facings applied to Super·Fine Fiber·Glass insulating blankets has been announced by Fred W. Segerstrom, manager of Super·Fine sales for Libbey·Owens·Ford Glass Company in Toledo. The new line includes aluminum foil reflective facings widely used in the furnace industry.

The facings, Mr. Segerstrom said, may be applied to any standard Super·Fine insulation regardless of thickness or density of the blanket.

High Thermal Protection

Super·Fine is an outstanding product for high thermal insulation protection. Addition of an aluminum facing gives the product additional advantages of a reflective surface, Mr. Segerstrom pointed out. In addition to aluminum foil, he indicated, other types of facings are available.

Withstands 450° to 600° F.

Regular Super·Fine Fiber·Glass withstands temperatures up to 450 degrees F. For specialized application, Mr. Segerstrom said, L·O·F makes Super·Fine with binder #22 for temperature ranges to 600 degrees F.

A high temperature adhesive is applied to the side casing of Bryant gravity-type furnace, model GH 57. It is now ready for the application of Super·Fine.

Applying Libbey·Owens·Ford Super·Fine Fiber·Glass insulation with aluminum foil reflective facing to side casings of Bryant furnaces. The aluminum foil facing provides additional insulation by reflection of radiant energy.

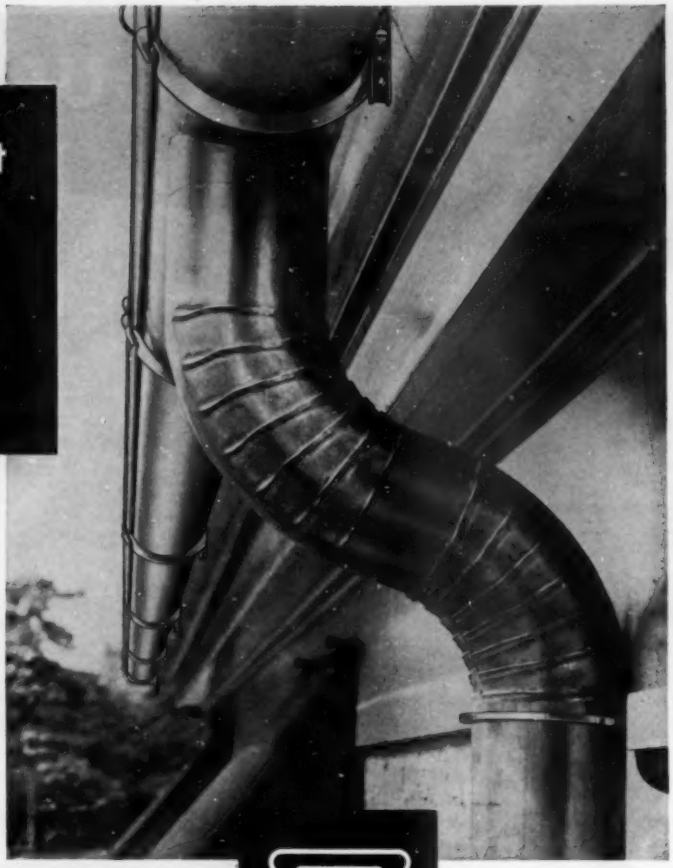
For further information about Super·Fine with binder #22 and foil facing, contact your nearest L·O·F office (offices in 26 cities). Or write Libbey·Owens·Ford Glass Company, Fiber·Glass Division, 4524 Wayne Bldg., Toledo 3, Ohio.

L·O·F GLASS Corrulux FIBER·GLASS

FIBER·GLASS

LIBBEY·OWENS·FORD GLASS COMPANY
FIBER·GLASS DIVISION

There's good profit for you in STAINLESS roof drainage



Now is the time to go after quality roof drainage business. The chromium-nickel stainless steel, Armco 17-7, Type 301 is again available. It is supplied for roof drainage in 28 gage (0.015"), has a soft neutral tone, known as No. 1 Finish, Soft Temper. This finish harmonizes with any architectural design or color scheme.

Priced Right

The cost of Armco Stainless Steel for roof drainage compares favorably with other high-quality roof drainage materials. In some cases the cost is even lower.

Make it Completely Stainless

This means that you can offer your customers lifetime service on all sheet metal details of roofs and roof drainage systems. For built-up roofs, there's Armco 17-7 strip for flashing, gravel stops, parapet covers, facia and soffits.

For roof drainage there are standard gutters, conductor pipe, elbows and stainless steel accessories.

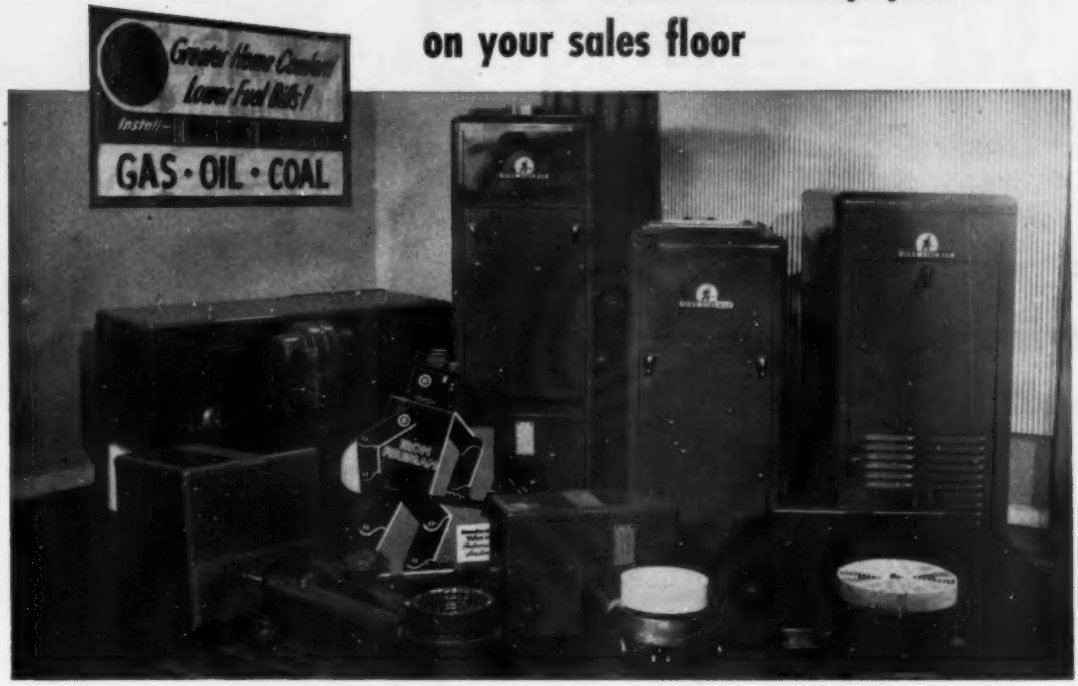
Ask your Armco Distributor

If you don't know where to obtain Armco Stainless Steel roof drainage material and accessories, ask your Armco Distributor. Tell him when you need delivery and he'll have the material where you want it, when you want it.

Armco Steel Corporation
1794 CURTIS STREET, MIDDLETOWN, OHIO
EXPORT: THE ARMCO INTERNATIONAL CORPORATION

You can sell HEATING and COOLING

with this Iron Fireman equipment on your sales floor



Why buyers like Iron Fireman heating equipment:

1. Complete line to choose from. A furnace for any size home; for basement, closet, attic or other installations, and for oil, gas, coal, or lp gas.
2. Fast heating *radiant* fire. Quick heat delivery with sensitive thermostat keeps air circulating; makes steady, comfortable heat.
3. Fuel economy. No heavy refractory to store heat—no long, wasteful warm-up period. *Radiant* heat on all heating surfaces *immediately*. Highest combustion efficiency.
4. Quality construction; long life; extra heavy gauge steel in both jacket and furnace; anti-friction oiled-for-life bearings on motors and fans; rubber fan mountings; baked enamel finish.

Dealers receive strong company backing which includes local advertising, merchandising, sales and engineering assistance, nation-wide advertising, and a name that has meant tops in heating for over 30 years.

Excellent territories available. Write for information to Iron Fireman Mfg. Company, 3106 W. 106th Street, Cleveland 11, Ohio

Iron Fireman

HEATING WITH OIL, GAS AND COAL— CENTRAL COOLING

Iron Fireman Central Cooling Unit

This unusually compact and efficient cooling unit ties in with warm air heating systems to give the finest type of year around air conditioning. This is a whole-house unit—not simply a room cooler.

Here is your chance to profit from the growing demand for home cooling systems. This Iron Fireman cooling unit is readily applied to either old or new construction.

The New York City Transportation System occupies this attractive new office building in downtown Brooklyn. The main section of the Board of Transportation Building is thirteen stories high. The low wing has six stories, and the high wing sixteen. Architects: William E. Haugaard (deceased) and Andrew J. Thomas.

Monel spandrel and through-wall flashings not only protect the lateral steel framework from rust, but serve to seal the building from water seepage. Monel is also used for the reglets into which the flashings are inserted. Sheet metal work: Wolkow-Braker Roofing Corp., B'klyn. 18, N. Y.

Getting your share of Monel Roofing business?

IT'S pretty easy to see why architects specify Monel® for a job like this.

More than 40,000 pounds of Monel Roofing Sheet went into the spandrels, reglets and through-wall flashings of this New York City Board of Transportation Building.

What better way could anybody find to provide life-of-the-building protection against water seepage?

First of all, Monel is highly corrosion-resisting. Stronger and tougher than other non-ferrous roofing metals, it resists stresses, strains and wear. And Monel does not rust. It's a natural to be specified for entire roofs — and for flashings, cornices, gutters, down-spouts, skylight frames and other sheet metal work of buildings that really count.

So go out after those Monel jobs! On civic buildings . . . office buildings . . . factories . . . hospitals . . . churches . . . even private homes.

Our helpful bulletin, *Instructions for the Soft Soldering of Monel Roofing Sheet*, gives you the kind of information you need when talking with architects and customers, or when actually working on a Monel installation. It's free. Write for a copy — *now*.

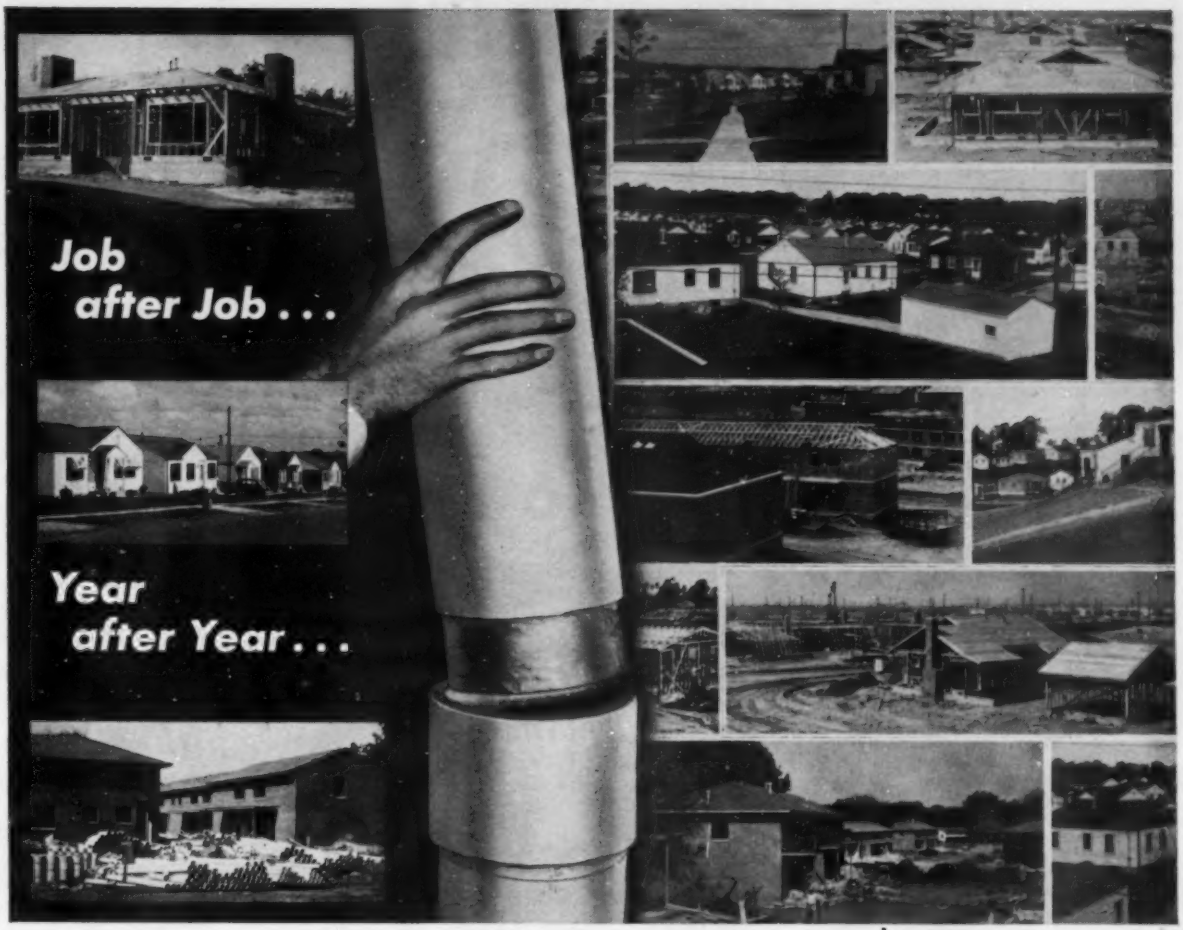
Experienced contractors agree that it costs no more — and takes no longer — to fabricate and install Monel. You handle it just as you do any other roofing metal.

Monel is easy to cut, bend and form. It can be soldered, brazed and welded.

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street New York 5, N. Y.

Inco Nickel Alloys

Monel . . . *"for the life of the building"*



. . . Contractors choose Transite® Gas Vent Pipe

MORE CONTRACTORS than ever before are making Transite Gas Vent Pipe the Number One selection for venting domestic gas-burning appliances.

Saves Time and Money . . . This popular asbestos cement product is light in weight, permits simplified handling, speeds installation. Tough and strong, it will not deform. It cannot rust.

Widely Approved . . . Included in the codes of hundreds of cities from coast to coast, J-M Transite Gas Vent Pipe is the *only* pipe that has been continuously listed by the Underwriters' Laboratories since 1932 for use as a vent pipe for domestic gas-burning appliances.

For further information, write to Johns-Manville, Box 60, New York 16, N. Y. In Canada, 199 Bay Street, Toronto 1, Ontario.

JOHNS-MANVILLE JM PRODUCTS

Johns-Manville TRANSITE GAS VENT PIPE

Transite Type B-W Gas Vent

Developed by Johns-Manville for the improved venting of recessed gas appliances, Transite Type B-W Gas Vent is an asbestos cement product, aluminum-jacketed and specially designed for simplified installation. Combines all of the advantages of Transite Type B Gas Vent Pipe.

The LENNOX Floating Blo
MORRISON PRODUCTS, INC.
AMERICAN FURNACE IN BUILDING AND RUBBERIZING, HAVE INSURED QUIET IN BLOWER ASSEMBLIES
MORRISON OFFERS BLOWER PARTS SO YOU CAN BUILD YOUR OWN RUBBERIZED ASSEMBLIES. ENGINEERED SPECIFICALLY FOR YOUR
IS BUILDING QUALITY AND QUIETNESS INTO THEIR FURNACES BY RUBBERIZING BLOWER ASSEMBLIES
BUILD YOUR OWN BLOWER ASSEMBLIES WITH MORRISON PARTS - RUBBERIZED FOR NOISELESS BLOWER OPERATION.
LEADING FURNACE MANUFACTURERS ARE RUBBERIZING BLOWER ASSEMBLIES TO ELIMINATE VIBRATION AND OBTAIN QUIETNESS
THE RHEEM MANUFACTURING COMPANY ASSURE SILENT, VIBRATION FREE PERFORMANCE OF THEIR ZERO CLEARANCE FURNACE BY MOUNTING BLOWER ASSEMBLIES ON LIVE RESILIENT RUBBER.
THE MORRISON ENGINEERING DEPARTMENT IS READY TO HELP YOU IN THE BUILDING OF YOUR OWN BLOWER ASSEMBLIES . . . RUBBERIZED FOR NOISELESS OPERATION.
MORRISON PRODUCTS, INC.
Bryant Heater
by BUILDING and RUBBERIZING THEIR OWN ASSEMBLIES
obtain QUIETNESS and QUALITY in their furnaces
It has been Morrison's privilege to work with Bryant Heater in this development.
Let us help you with your problem.
MORRISON PRODUCTS, INC.
RUBBERIZING
A TWO-WAY PROFIT AND SALES OPPORTUNITY IN BUILDING FURNACES
1 BUILD YOUR OWN BLOWER ASSEMBLIES AND KEEP 55% OF BLOWER DOLLAR IN YOUR PLANT.
2 BUILD QUALITY IN YOUR FURNACE . . . ELIMINATE VIBRATION AND NOISE BY RUBBERIZING BLOWER INSTALLATIONS.
WRITE MORRISON.
MORRISON PRODUCTS, INC.

MORRISON OFFERS BLOWER PARTS SO YOU CAN BUILD YOUR OWN ASSEMBLIES—*RUBBERIZED* FOR QUIETNESS AND QUALITY

MORRISON PRODUCTS, INC. 16816 WATERLOO RD. CLEVELAND 10, OHIO

NEW PRODUCTS

Larger coolers for residential or commercial installations

Blower-type coolers

Fan-type coolers

New 1954 Products

Palmer coolers are *newly styled* by Vytant Aleks, prominent designer of home appliances. 1954 SNO-BREZE and PALMAIRE are *quality appliances* in both appearance and selling appeal.

And 1954 SNO-BREZE and PALMAIRE coolers are *built* better to *sell* better. Heavier and stronger steel construction... *two* coats of tough, baked-on enamel... give your customers more *durable* coolers, insure long-lasting satisfaction.

New 1954 *styling* plus new 1954 *construction* will give you more sales and profits with SNO-BREZE and PALMAIRE.

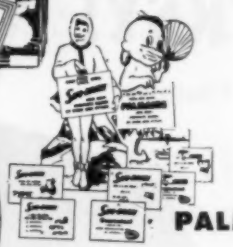
MORE ADVERTISING

More 1954 Advertising

1954 SNO-BREZE and PALMAIRE evaporative coolers will be pre-sold to consumers with a solid campaign of hard-selling, large space *magazine advertisements,* starting in March in PROGRESSIVE FARMER and SUNSET.

This campaign will be backed by spot radio, television and newspaper advertising in selected *local markets.*

BETTER MERCHANDISING



Better 1954 Merchandising

Palmer offers you liberal cooperative advertising allowances so you can tie in *your store* with Palmer's big program.

Effective *selling folders* and *broadsides* will help you solicit business via direct mail. And your store can become SNO-BREZE or PALMAIRE "headquarters" with *point-of-sale* display cards, window streamers and die-cut floor displays.

PALMER Manufacturing Corporation
Phoenix, Arizona
SUBSIDIARY OF McCRAY REFRIGERATOR COMPANY, INC.

1954 SNO-BREZE and PALMAIRE evaporative coolers

mail the coupon today!

When you sell Palmer, you sell *America's No. 1 line* of evaporative coolers. And Palmer's line is *complete*—you have a cooler to meet every customer need, from small room coolers to the largest residential or commercial application.

Why not start *now* with new 1954 SNO-BREZE or PALMAIRE coolers... backed by new 1954 advertising and merchandising programs to help you *make money.* Mail the coupon today!

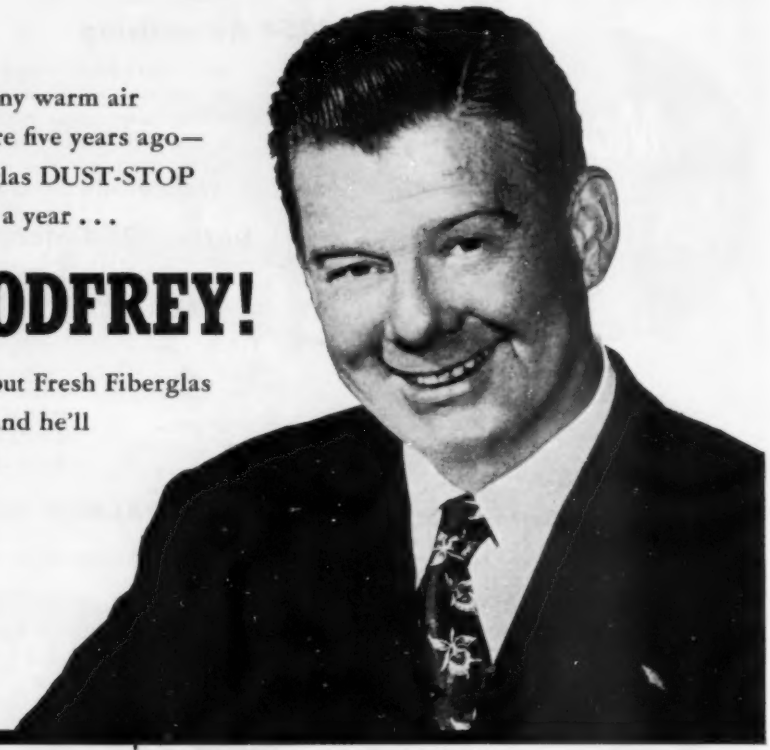
PALMER MANUFACTURING CORPORATION L-2
2200 W. Filmore Street
Phoenix, Arizona
Please send me information on Palmer Coolers. I am interested in
☐ a Distributorship ☐ a Dealership.

Name.....
Company.....
Address.....
City.....Zone....State.....

it pays

to Feature Fiberglas Furnace Filters in February!

There are four times as many warm air furnaces today as there were five years ago—and to help you sell Fiberglas DUST-STOP Air Filters* for them *twice* a year . . .



ARTHUR GODFREY!

. . . will tell customers to put Fresh Fiberglas Filters in the Furnace . . . and he'll tell them week after week!

CHECK YOUR STOCKS NOW

Order enough Fiberglas DUST-STOP Air Filters from your distributor to meet the big February demand.

THE BEST FILTERS AND THE BEST KNOWN FILTERS ARE GENUINE

OWENS-CORNING
FIBERGLAS
DUST STOP*
AIR FILTERS

*FIBERGLAS and DUST-STOP are trademarks (Reg. U. S. Pat. Off.) of Owens-Corning Fiberglas Corporation for products made of or with fibers of glass.

"CHRYSLER BUILDING EAST"
Architect:
Reinhard, Hofmeister & Walquist.
General Contractor:
Turner Construction Co.
Sheet Metal Contractor:
Benjamin Riesner, Inc.

FOR MAXIMUM PROTECTION

at the Chrysler Building East

COPPER BASE FLASHING *is installed with the new Chase Copper Base Flashing Expansion Joint*

Notice this long run of copper base flashing at the 11th floor step-back of Chrysler Building East. Whether the New York mercury dips or soars, expansion and contraction of the metal are safely and efficiently allowed by the proper spacing of the Chase Expansion Joints.

The efficiency and economy of copper for base flashing is assured with this new Expansion Joint. Architects as well as Sheet Metal Contractors are aware of the solid lasting protection, which this development now makes possible.

The new Chase Copper Base Flashing Expansion Joint, made of 18-ounce copper has open seams on the edges of the joint for fast, easy interlocking and soldering to the adjoining lengths of base flashing. A "cap box" is supplied with each Expansion Joint for attachment to the cap flashing and a completely watertight job.

FREE FOLDERS: *You will also want to know about the new Chase One-piece Thru-Wall Copper Flashing and Cap Flashing Receiver. Write for folders on both these new developments in copper flashing.*

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Please send me your free folders
☐ *Chase Copper Base Flashing Expansion Joint.*
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NATIONAL
Indoor Comfort
EXPOSITION

HEATING COOLING

MAY 16 THRU 20, 1954

AND

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COMMERCIAL MUSEUM, ***Philadelphia, Penna.***

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New products, *new* systems, *new* methods in AUTOMATIC OIL HEATING and YEAR 'ROUND AIR CONDITIONING! New equipment never shown before!

CHOICE EXHIBIT SPACE AVAILABLE

. . . for manufacturers, distributors and jobbers selling to the oil heating equipment industry and to the fuel oil jobber. 7,500 to 10,000 of these will attend this show. They're interested in "*what's new*" in heating, cooling and fuel oil sales and distribution.

Phone, write or wire for booth space . . . Some choice locations still available.

You are also invited

to the General sessions of the *32nd ANNUAL OHI CONVENTION,* held on the above dates in the Commercial Museum ballroom. You need *not* be a member to come. NO CHARGE!

MAKE YOUR HOTEL RESERVATION NOW!

Address Sales Department, Benjamin Franklin, Philadelphia, for reservation at the following hotels: Adelphia, John Bartram, Benjamin Franklin, Penn-Sherwood, Warwick . . . or any hotel you may specify.

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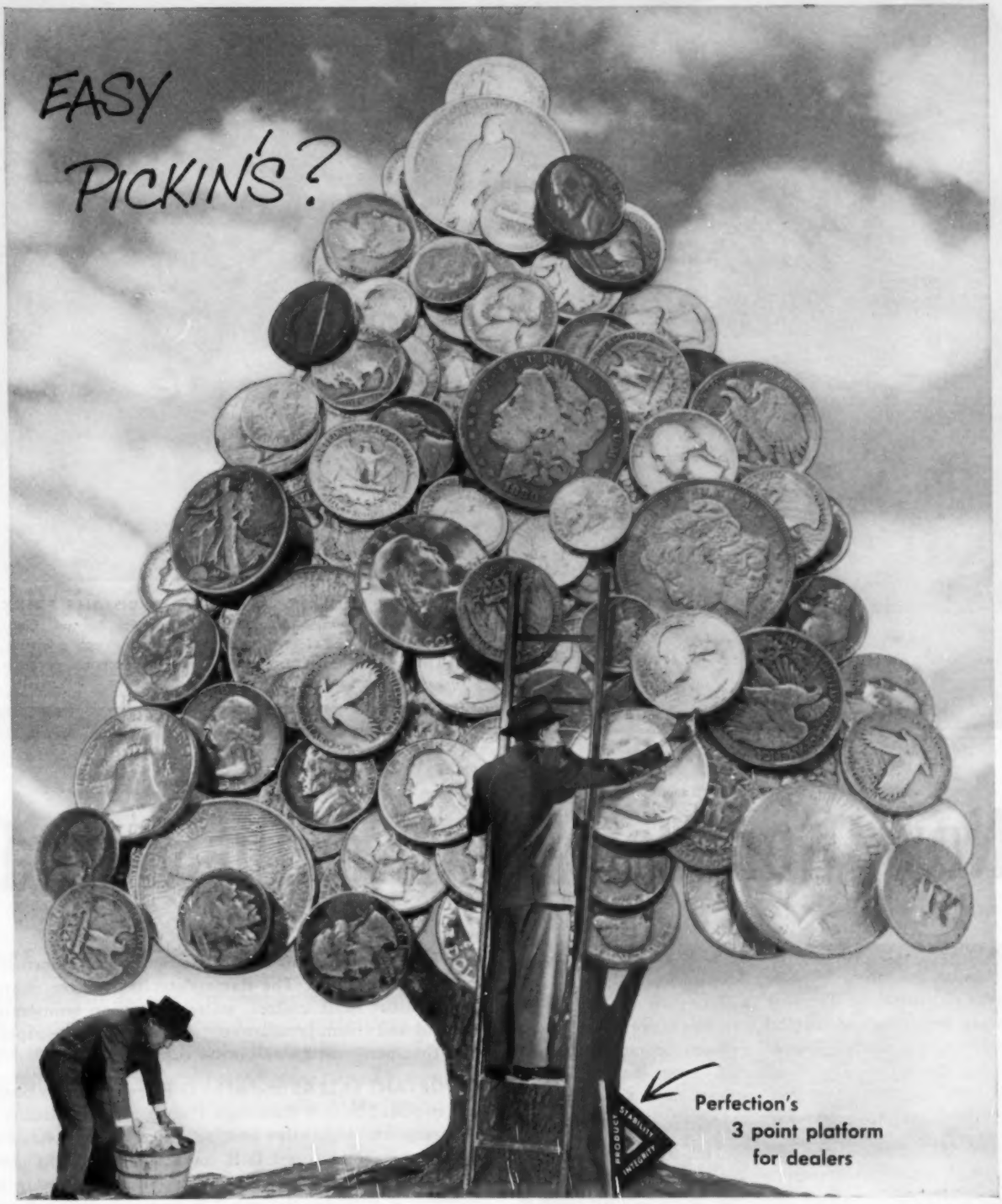


*Pat. Pending

Not on your life! Selling furnaces still takes plenty sweat and tears.

But Perfection can help you smooth the way with . . .

1. Regulaire*... the only *real* exclusive in the heating business.

2. "On-the-spot" sales assistance by experienced Perfection men.

3. Protection from factory or cut-rate competition in your territory.

Companion air conditioning unit helps you sell a *complete* "comfort" package.

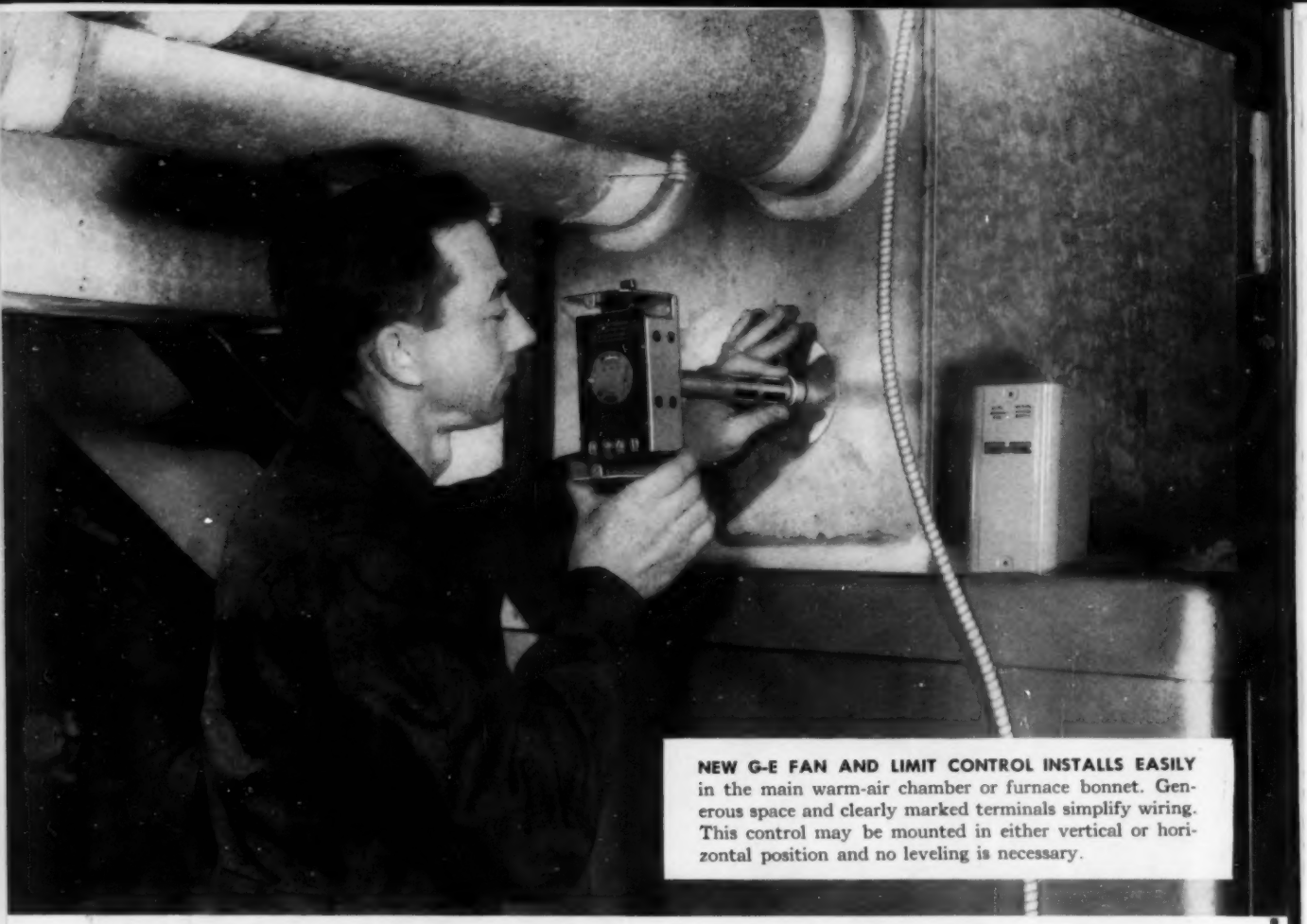
Write us. Perfection Stove Co., 7534-A Platt Ave., Cleveland 4, Ohio.

YOUR HOME DESERVES

Perfection

PORTABLE HEATERS

FURNACES • HOME HEATERS • RANGES • AIR CONDITIONERS • WATER HEATERS



NEW G-E FAN AND LIMIT CONTROL INSTALLS EASILY in the main warm-air chamber or furnace bonnet. Generous space and clearly marked terminals simplify wiring. This control may be mounted in either vertical or horizontal position and no leveling is necessary.

New General Electric Oil Burner

EASY INSTALLATION of the new G-E oil burner controls keeps on-the-job time at a minimum, man-hours saved mean profit to you. The new G-E controls are designed to interchange easily with all other makes of controls—makes conversion a simple operation. Each control has ample wiring space and clearly indicated wiring connections. All controls are shipped to you ready-to-mount in any position. No leveling is necessary.

EASY SERVICING of the new G-E oil burner controls is another important benefit. Fewer moving parts in these simply-designed controls mean less possibility for trouble. All moving parts are totally enclosed to reduce dust accumulation, easily removable covers provide complete accessibility.

DEPENDABLE PERFORMANCE of G-E's complete line of oil burner controls lets you give your customers the dependable service they demand. Designed for top performance by leading engineers, G-E controls combine simple, attractive design with sturdy construction. Priced competitively, the new G-E stack switch, room thermostat, and fan and limit control will take care of every normal oil burner installation. The flame detector, master control, temperature limit control, water immersion temperature control and steam pressure control round out the superior line that performs all oil burner control duties.

IMPORTANT EXTRAS offered by G-E are extremely beneficial to you. The G-E Exchange Plan enables the dealer to exchange an inoperative heating control *of any make* for a factory reconditioned G-E control of similar function. In addition, the finest pocket-size service manual in the industry is available through G-E control servicing distributors. A network of G-E heating control servicing distributors are franchised across the nation, with more being constantly added, to help you give your customers the finest service possible. General Electric Company, Schenectady 5, N. Y. 740-51

WATCH FOR THE G-E SERVICE SCHOOL SPONSORED BY YOUR G-E HEATING CONTROL SERVICING DISTRIBUTOR

EASY WIRING means less time on-the-job. Generous wiring space is provided. An adjustable mounting flange simplifies proper positioning of the helix. One knockout and conduit hole are provided in the bottom of the enclosure to accommodate either BX or rigid conduits. Screw-on panel is easily removed to expose entire operating mechanism.

CONVENIENT SETTINGS on clearly marked scales. Directly calibrated in degrees Fahrenheit, they are readily accessible by simply removing the cover. As the temperature varies, the helix rotates and actuates the fan. Mechanical interlock helps prevent cycling on limit switch without fan operation. Summer switch permits fan cooling in hot weather.

COMPLETE ENCLOSURE of the switch mechanisms reduces the entrance of dust or other foreign matter. The thermo sensitive element is well-protected by a rugged metal guard. The control uses less parts than similar models—means less possibility for trouble.

Controls Cut Installation Time

TAKE ADVANTAGE OF G-E EXCHANGE PLAN

Now you can increase customer satisfaction by giving immediate on-the-job service! The G-E Heating Control Exchange Plan allows the serviceman to replace a customer's inoperative control of any make (out of warranty) with a rebuilt G-E control at once. Then, he simply attaches a tag to the inoperative control and exchanges it for a factory reconditioned G-E control at his G-E servicing distributor. And remember, all rebuilt G-E controls carry new control guarantee, except for finish.

Progress is our most important product

GENERAL ELECTRIC

General Clay

answers the questions everybody is asking about

RADIO FREE EUROPE

General Lucius D. Clay, former U. S. Military Governor in Germany, and leader of the Berlin Airlift, was first Chairman of the Crusade for Freedom.

General Lucius D. Clay answers nine vital questions about an organization which needs your dollars and your support—Radio Free Europe.

RFE is important to *you* and to millions of freedom-loving people behind the Iron Curtain, *who are our first line of defense against Soviet aggression.* General Clay tells why:

Q. What is "Radio Free Europe"?

A. Actually, it is 6 stations in Western Europe broadcasting TRUTH through the "Iron Curtain" to the people of 6 captive countries in their own tongues and in the voices of their own known and trusted exiles.

Q. What is the difference between Radio Free Europe and the Voice of America?

A. The Voice of America is run and paid for by the Government. Radio Free Europe is operated as an independent American enterprise by a committee of private citizens. It is *people* talking to *people*—Poles telling the truth to Poles, Czechs and Slovaks telling the truth to Czechs and Slovaks, etc. It is not bound by diplomatic limitations.

The Voice of America broadcasts to many countries and can only devote a limited amount of time each day to any one country. But Radio Free Europe's "Voice of Free Czechoslovakia", for example, broadcasts about 20 hours each day to Czechoslovakia alone.

Q. Who supports Radio Free Europe?

A. Millions of American citizens like yourself, through voluntary contributions of millions of dollars! More than 1,000 carefully screened people man the stations. The management is American, but the staff is largely composed of editors, reporters, teachers, clergymen and entertainers who have come from behind the Iron Curtain.

Q. What countries does Radio Free Europe reach?

A. Czechoslovakia, Poland, Romania, Bulgaria, Hungary, and Albania with a total of 70,000,000 population.

Q. How does Radio Free Europe get its news?

A. Radio Free Europe monitors most Communist broadcasts. Every program is analyzed by nationals of the captive countries who *know the truth.* Voluminous information from many sources is compiled and evaluated constantly by exiled experts. New exiles bring out new truth daily—and they bring it to RFE.

Q. Are more transmitters needed?

A. Yes. More transmitters and still more transmitters are needed now to let truth speak louder than ever to those captive people. Transmitters in new locations are needed too—as added insurance that this "Voice of Freedom" will never be stilled. Each new transmitter insures a new listening position on a captive radio dial.

Q. How much is needed now?

A. At least $10,000,000. But, as important as the money, the WIDEST POSSIBLE PARTICIPATION—to communicate the truest possible feeling of FRIENDSHIP FROM MILLIONS OF AMERICAN PEOPLE IN ALL WALKS OF LIFE.

Q. How much should one individual give?

A. All he can . . . A "truth dollar" is suggested.

Q. Why is Radio Free Europe so important to me?

A. Because it is devoted to the single most important job in the world—to help keep World War III from happening. If 70,000,000 people in the six Iron Curtain countries continue to resist Soviet tyranny, the Kremlin is kept off balance in one of the most strategically sensitive areas in the world.

This transmitter at Holzkirchen, Germany, is the largest of Radio Free Europe's 21 outlets. It has brought protests from angry Communists in Czechoslovakia where it is beamed 20 hours a day.

RADIO FREE EUROPE *supported by* **CRUSADE FOR FREEDOM**

Sun FUEL MASTER

PRICED *to sell* ··
BUILT *to serve!*

GAS FURNACES

UPFLOW *and* DOWNFLOW HI-BOYS . . .
BASEMENT MODELS . . . *backed*
***by a strong* 20 YEAR GUARANTEE**

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Established 1900 **Incorporated 1928**

Manufacturers' Agents

Are you interested in securing additional lines?

We are occasionally asked by our manufacturer advertisers to suggest the names of manufacturers' agents in various sections of the country whom they can contact in regard to representation of their warm air heating, residential air conditioning and sheet metal products.

If you would like your name listed on our records for inquiries we may receive on your territory, we invite you to write us. There is no charge in connection with this service.

AMERICAN ARTISAN

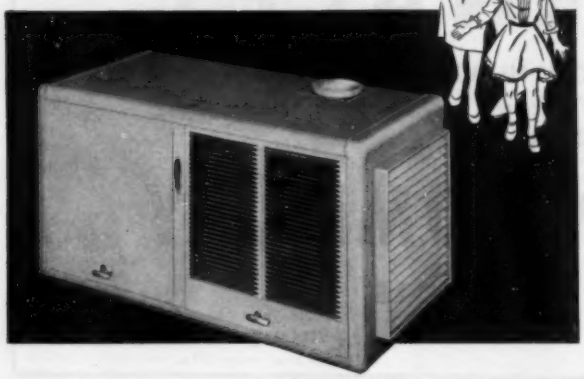
6 N. Michigan Ave. Chicago 2, Ill.

Appliance Styling

makes the REZNOR PAC

ideal for living

area installations



Reznor's gas-fired PAC (for Packaged Automatic Comfort) is so compact it will fit into the most out-of-the-way corner, yet so smartly styled that it doesn't need to be hidden. As a suspended unit in utility room, recreation room, or even in the kitchen, the PAC's trim styling makes it as completely in good taste as any other home appliance.

Available in 75, 100 and 125 thousand BTU models, the PAC is ideally suited for crawl space, attic and all other horizontal furnace applications. But the PAC is the *only* horizontal furnace with the appliance styling which makes possible installation at the most practical point in the home, regardless of other plans for the same area.

REZNOR SUSPENDED MODELS . . . 8 sizes— 25 to 200 thousand BTU

The PAC is just the furnace many small home owners have been waiting for. Don't miss this opportunity to cash in.

Used without ducts, the PAC is a deluxe unit heater which meets the most exacting demands for cleanliness, quietness, and fine appearance. But for most of your unit heater jobs, the standard Reznor line of suspended models will fill the bill perfectly.

Write today for more details—ask for Bulletin GNP-52 on the PAC or Catalog GN-53 on the complete line. **The Reznor Manufacturing Company, 53 Union Street, Mercer, Pa.**

THE WORLD'S LARGEST-SELLING GAS UNIT HEATER

REZNOR HEATERS

WHAT ASSOCIATIONS ARE DOING —

(*Continued from page* 97)

quality of home heating comfort for the home owner. However, the advances in the products made available by manufacturers are of little value if the contractors, who do the installation and service work on these units, fail to keep pace in the quality and competence of their work. Your schools have aided greatly in this improvement, and I hope the association may see fit to continue the schools, as much remains to be done before we reach a position where home owners secure all the satisfaction and comfort to which they are entitled.

"It seems to me that the time may be propitious for developing advanced schools, while continuing the initial training of the present schools. Local dealers should be encouraged to continue sending men to the schools until all men charged with installation and service work in the industry may have attended one or more schools. However, in addition to that, I think it is important that men who have attended one school should attend additional schools to brush up on the material covered in the initial school and also to secure advanced training."

The chapter has recently secured the services of R. L. Parker, who will act as assistant to T. A. Clark, technical director of the association. Mr. Parker for the past five years has been associated with Engineering Industries Co., Ltd., and before that had several years' experience in the warm air heating industry.

Cites Perils of "Bid Shopping"

SPEAKING recently at the convention of the Carolinas branch of the Associated General Contractors, Gordon Waters of the Carolinas Roofing and Sheet Metal Contractors Association warned against the practices of "bid shopping" by general contractors and "bid peddling" by subcontractors. Calling for action within the industry to eliminate these evils, he said: "If we fail to do this ourselves, then someone else will surely do it for us." He referred to the bill before Congress known as the Federal Construction Contract Act (S. 848 and H. R. 1825). This, he said, is supported by subcontractors and opposed by general contractors. "Government already has one foot in the door," he stated. "Do we wish to invite them to come all the way in? I believe we can iron out our problems ourselves. I believe we can and we must work together with a committee of general contractors and subcontractors to solve our difficulties."

Gas Unit Heaters Discussed at Kalamazoo

SUBJECT OF THE TALK given by W. N. Blinks, sales manager, General Gas Light Co., at the January 4 meeting of the Kalamazoo Sheet Metal, Roofing, Heating & Air Conditioning Contractors' Association was gas unit heaters and their application. Slides were used to illustrate general as well as some special applications of gas unit heaters.

The association reports that out of 77 licensed heating contractors in the Kalamazoo area, 40 are members of the association. Under a program designed to bring as many as possible of the 37 remaining contractors into the association, non-members are being invited to attend regular and special meetings to learn how the association operates and how membership can be of direct benefit to them.

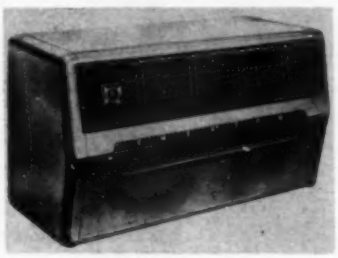
EQUIPMENT DEVELOPMENTS —

(*Continued from page* 101)

interconnecting water piping. There is a protective fan guard. Models are now available in sizes of 5 to 65 tons, and are intended for either outdoor or indoor installation.

Air Filter for Low and High Velocities

NEW 1 IN. THICK air filter designed to be efficient in both high and low velocity air conditioning systems and to hold up to 800 grams of standardized fine air cleaner test dust between cleanings — Farr Co., P.O. Box 10187, Airport Station, Los Angeles 45. Sustained performance is maintained with low pressure loss, the company states. The filter is designed to operate efficiently at between 800 and 1200 cfm per 20 × 20 in. panel. At the higher velocity, the face area can be reduced to a great extent, according to the manufacturer. The screen features a gable-crimp design.



Above: Conditioner

Left: Filter

Air Conditioning Units

COMPLETE LINE of 29 room, residential and small commercial air conditioners ranging in size from 1/3 to 3 tons — Emerson Radio and Phonograph Corp., 111 8th Ave., New York 11. The "Compact" window type air conditioner series is offered in two 1/3 and two ½ ton models. The "Custom" window series is available in 16 models, including two ½ ton, eight ¾ ton and six 1 ton units; some of the models (one of which is illustrated) incorporate a sealed-in electrical heating element.

Pilot for Gas Fired Equipment

SERIES 700 "SAF-T-FLAME" pilot for use on unit heaters, furnaces, and other equipment utilizing a constantly burning gas pilot — Partlow Corp., New Hartford, N.Y. The device uses the flame conductivity principle to achieve instantaneous cutoff after pilot flame failure. Suitable electrodes are placed in the pilot gas flame, and a small electric current flows across the pilot flame, ceasing when the flame is extinguished. This current operates a relay which controls electrically operated valves in the fuel line. Thus, when the pilot is extinguished, the entire fuel supply is cut off. The electrodes entirely surround the pilot flame, preventing fluctuation or wavering of the flame from breaking the circuit and causing premature tripping of the valves. High voltage

YOU CAN
INSTALL 'EM FASTER...

CONNOR ENGINEERING CORPORATION

kno·draft®

adjustable air diffusers

Remarkable mechanical simplicity (see pictures below) enables you to install Kno-Draft Adjustable Air Diffusers in half the ordinary time . . . gets your job OK's a lot faster. And, since Kno-Draft is completely adjustable *after* installation, there's no time wasted trying to figure out everything about air movement in advance.

1 INSTALLATION time cut in half, say contractors. Simply attach outer cone to duct, then fasten preassembled diffuser unit to three suspension bolts.

2 AIR DIRECTION ADJUSTMENT made after installation. A few screwdriver turns adjust suspension bolts to the precise discharge angle desired — from horizontal to vertical.

3 BALANCING a Kno-Draft air distribution system is completely simple. Single annular air stream permits easy direct volumetric readings.

4 AIR VOLUME ADJUSTMENT is as simple as a twist of the wrist. Just turn the central operating screw to adjust damper to desired volume.

CONNOR ENGINEERING CORP.

Danbury, Connecticut

Also Manufacturers of Dorex Air Recovery Equipment

● NEW EDITION! Kno-Draft Data Book now in new 32-page format. Complete up-to-the-minute specifications, engineering and installation data on Kno-Draft *Adjustable* Air Diffusers. Bring your files up to date. Mail coupon today.

CONNOR ENGINEERING CORP.
Dept. S-24, Danbury, Conn.

Please send me the *new edition* of the Kno-Draft Data Book — without obligation, of course.

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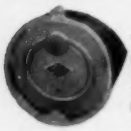
SMALL.. WALKER Junior Fuel Saver Automatic Draft Regulators come in four types—engineered for use with space heaters, circulators, water heaters, trailer stoves and all other heating equipment within that range.

There's a
WALKER
Fuel Saver
AUTOMATIC DRAFT REGULATOR
for Every Heating Application

LARGE...

The Ball Bearing Type WALKER Industrial Fuel Saver is available in 16" to 48" sizes . . for applications in schools, office buildings, apartments, stores and manufacturing plants.

AND IN BETWEEN



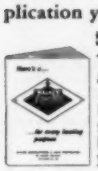
There are two types of WALKER Domestic Fuel Savers to meet draft control requirements of central heating plants in homes, apartments, and multiple housing projects.

Only WALKER Makes a Complete Range of Sizes of Automatic DRAFT REGULATORS

WALKER Automatic DRAFT REGULATORS

● Whether for trailer stoves or for industrial boilers serving the nation's largest housing project—the *right* Walker Fuel-Saver Automatic Draft Regulator can be selected from stock. Twelve Million sales...thousands of successful applications throughout the range of heating...speak for themselves...give proof of Walker design, craftsmanship and engineering. You can be sure that there is a Walker Fuel-Saver ready for any application you may have.

SEND FOR CATALOG



Twenty pages show all types, sizes in full line. Applications and installations described. A valuable handbook FREE, if you write . . .

CHECK THESE 9 POINTS

1. **EASE OF ADJUSTMENT** with exclusive patented pointer and calibrated dial.
2. **BOX TYPE HINGES** with sealed protection against corrosion, dirt and dust.
3. **BALANCE PLATE**—scientifically designed to maintain proper balance.
4. **SPECIFIC PIPE SIZES**—insure correct capacity for every type of installation.
5. **ALUMINUM FRAME**—rigid, long lasting.
6. **EASE OF INSTALLATION**—collar and stub for quick attachment.
7. **ARMCO ALUMINIZED STEEL**—for heat and corrosion resistance.
8. **FACTORY SET**—for "performance as perfect as possible."
9. **FREE FLOW** of air in unrestricted inside area.

NEW WALKER VENTURI-TOP CHIMNEY CAP

is winning approval on more and more installations. Proved to be ideal in design and construction to correct insufficient draft and stop down draft . . . and to solve ventilating problems. Sizes from 3" to 8" ready for immediate delivery.

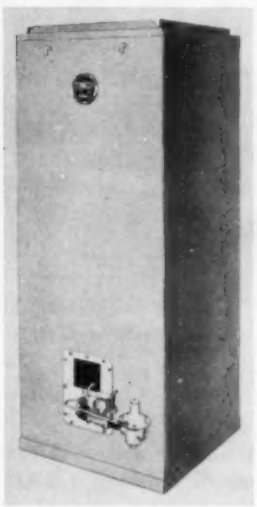
WALKER MANUFACTURING & SALES CORP.
1730 PENN. ST. ST. JOSEPH, MO.

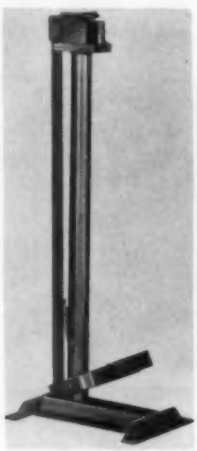
equipment developments . . .

is used on the electrodes so that the pilot is a complete self-lighting unit. Models are available for single or double burner applications with manual push button or automatic pilot burner ignition. All are offered for 110 volt, 60 cycle a-c applications.

Gas Fired Counterflow Furnace

"RANCHIEF CHIEF" gas fired counterflow furnace with a bonnet output of 56,000 Btu — Conco Engineering Works, Mendota, Ill. It can be used with natural, manufactured, mixed or LP gases. The unit is insulated against noise and heat loss by foil-backed spun glass, and has a diaphragm gas valve. It is factory assembled, fully wired, and fire tested before shipping. It is 22 × 22 in. in size, and is "budget priced," according to the manufacturer.





Above: Notcher
Left: Furnace

Sheet Metal Notcher

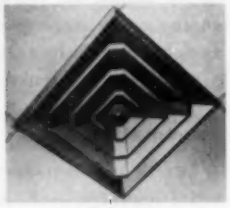
SHEET METAL notcher designed for simple, rapid notching — Wilder Mfg. Co., Route 2, Box 880, Carmel, Calif. It will notch a 6 in. furnace collar in 15 seconds, the company states. The tool is available with a stand or for bench mounting.

Casement Window Conditioners

THREE SIZES (½, ¾, and 1 hp) of room air conditioners designed for casement window installation — Deering Air Conditioning Co., 1069 Celestial, Cincinnati. No modifications (cutting, filing, etc.) of the casement window structure are necessary. Centrifugal fans are on both the evaporator and condenser (high and low sides). A special apparatus between the condenser fan scroll and the end condenser coils is intended to provide moisture evaporation under all conditions. A variety of sizes is offered for 54 types and sizes of steel casement and aluminum awning type windows. The unit does not block out the shade or blinds over the window from the top of the window to the top of the conditioner. It can

also be installed in conventional windows, and will fit any window opening as small as 10¼ in. high × 14½ in. wide, the company states.

Window Conditioner



Ceiling Diffuser

Ceiling Air Diffusers

MODELS SFS and SFR square and rectangular ceiling diffusers available in two styles: for installation either on plastered ceilings or for flush mounting in T bar framework for acoustical tile ceilings — W. R. Carnes Co., S. Main St., Verona, Wis. Featured is a corner air scoop designed to assure an adequate quantity of air from the corners as well as the sides and to give a well balanced 360 deg air pattern. The models handle from 125 to 6925 cfm output. A wide variety of both square and rectangular neck sizes is available.

Oil Fired Space Heaters

"PARAFLO" oil fired, warm air space heaters, available in capacities of 200,000 and 250,000 Btu per hr, are described in bulletin 550 (four pages) — Dravo Corp., 1203 Dravo Bldg., Pittsburgh 22. A table of specifications gives engineering design data.

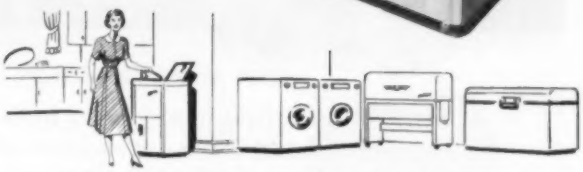
Motor Couplings

THREE SIZES of Type C couplings adapted for use with "tapered lock" bushings, for direct connecting motors to blowers, pumps and compressors — Lovejoy Flexible Coupling Co., 4841 W. Lake St., Chicago 44. Couplings adapted in this way permit easy fastening to shafting with firmness of fit and permit distributors to carry a smaller number of coupling bodies taper bored for tapered lock bushings, the company states. One size is for bores of ½ to 2 in., and two other models are for ½ to 2½ in. bores.

Mobile Cooling Unit for Homes

MOBILE AIR CONDITIONING unit which can be moved from room to room, and is designed to cool rooms of about 500 sq ft on hottest days — Heating and Cooling Div., Union Asbestos and Rubber Co., 332 S. Michigan Ave., Chicago 4. The unit rolls on rubber composition wheels and can be handled by the average housewife, the company states. It is 28 in. high, 18 in. wide and 17 in. deep, and weighs 200 lb. Equipped with a squirrel cage fan, the unit is plugged into any outlet for operation. It delivers 250

Value-wise Housewives appraise and praise



Here's your No. 1 profit-maker for '54! The biggest home-appliance value you can offer the thrifty housewife! And *it* isn't hard to sell . . . *she'll* quickly see it's the *real* answer to the garbage nuisance!

How's this for a perfect sales picture? Automatic heating prevents burning refuse in the furnace. So almost every home needs a *new* Majestic Incinerator! All your past heating customers are prospects . . . and you already have the list! With low inventory you can offer a choice of three models — fuelless, and AGA-approved gas and automatic gas. Any model gets rid of *all* wet and dry garbage and trash-burner waste! Household refuse is simply loaded in unit 'til full; then ignited! Patented downdraft design, Jet-Air Action dry contents before and during burning! Easily connects to furnace flue in kitchen, basement, utility room. No grinding or grating . . . no moving parts to jam or wear! White enamel finish . . . compact, modern design blends nicely with other appliances. Ideal tie-in on new furnace sales or call backs. Write for full details today! Or contact your jobber.

Today's Most-talked-about Chore-Saver!

The Majestic Co., Inc.

110-A Erie Street Huntington, Indiana

Ingersoll *specializes* in producing heat-resisting stainless steels—of *exceptional forming qualities*—specifically for oil burner combustion chambers.

Whether you use these steels in large or small quantities, Ingersoll facilities offer exceptional service by custom shearing to your own specified combustion chamber blanks, or multiples thereof.

Advantages
OF HEAT-RESISTING STEEL CHAMBERS

- **No breakage in shipment or handling**
- **Lighter weight lowers freight costs**
- **Quicker heating—greater efficiency**

ENGINEERING B-W PRODUCTION

Write, wire or phone for details

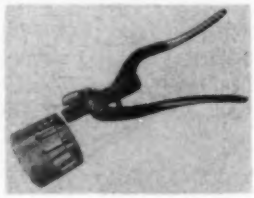
Ingersoll STEEL DIVISION
Borg-Warner Corporation
310 S. Michigan Ave., Chicago 4, Illinois
Plant: New Castle, Indiana

equipment developments . . .

cfm of air, according to the manufacturer. Water is drawn from any household tap through a ⅜ in. flexible rubber tube. Air passes through a cleanable filter. A switch permits operation with the refrigeration unit shut off for simple air circulation. The company is also producing a new single package heating and air conditioning model available in various sizes from 5 to 15 hp. It incorporates a recirculating pump.

Manometer

"FLEX-TUBE" manometer for plus, minus and differential readings — F. W. Dwyer Mfg. Co., 317 S. Western Ave., Chicago 12. It is designed to serve as an air filter gage, static pressure indicator, draft gage, air velocity meter, etc. Equipped with a plunger type oil lever adjuster, the instrument has ranges of 0 to 3 in. and 0 to 7 in. water, with a low range accuracy of 0.01 in. water, according to the company. It is also available in a direct reading velocity model for use with a pitot tube.



Above: Crimper
Left: Manometer

Hand Operated Pipe Crimper

No. 111 HAND OPERATED crimper for use on the open end of any size sheet metal furnace and gutter pipe up to 20 gage — Whitney Metal Tool Co., 91 Forbes St., Rockford, Ill. The tool weighs 1 lb, is about 9 in. long. Squeezing the handles together brings the 1½ in. long forming jaw down into the open anvil jaw and forms the crimp as deep or long as is desired. A spring return opens the handles.

Aluminum Roofing and Siding

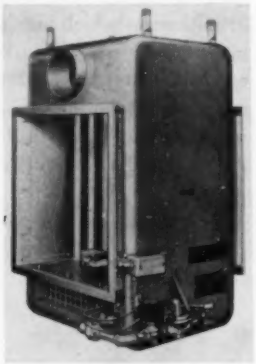
MODEL 8-V CRIMP ROOFING and siding, in aluminum, designed to reduce the amount of metal needed for side laps in farm and commercial applications — Building Products Div., Reynolds Metals Co., 2500 S. 3rd St., Louisville. Two 12 ft lengths comprise one square of the material, and this wide sheet provides economies in application costs, the company states. It is available in 0.019 in. and 0.024 in. (26 and 24 gage) sheets, both gages being embossed for rigidity and both available in all standard lengths from 6 to 12 ft, in 1 ft increments.

Thermopilot Valves for Gas

MANUAL RESET thermopilot valves for gas fired applications, providing automatic gas shutoff upon pilot flame

failure — General Controls Co., 801 Allen Ave., Glendale, Calif. The valves operate on the thermocouple principle, requiring no outside electrical source. They are for use with all gases including LP and sour gas and have a 100 per cent shutoff feature, the manufacturer states. Both the non-flow interrupter type (MR-3) and the flow interrupter type (MR-4) are available with or without pilot take-off or with an independent auxiliary valve for separate pilot gas flow. The units are applicable to standard tube and pipe sizes.

Above: Thermopilot Valve



Right: Duct Heater

Gas Fired Duct Heaters

SERIES 23A-DU gas fired duct heaters, in twelve models ranging in input capacity from 65,000 to 500,000 Btu per hr — United States Air Conditioning Corp., 3300 Como Ave., S.E., Minneapolis 14. The equipment is designed to burn all types of gas, and is intended for heating and air tempering applications where air is circulated by an independently located blower, especially when used in conjunction with air conditioning systems. A rectangular duct flange for connection to inlet and outlet ducts is standard. The burners do not depend upon the remote fan for air. A built in draft diverter allows the unit to be installed 6 in. from the ceiling or walls. Controls can be wired to operate simultaneously with the blower, or a thermostat may be located in the leaving air side of the ductwork.

Prefabricated Round Duct in Short Sections

GALVANIZED "NESTED Snaplock" round duct in 5 ft lengths — The Excelsior Steel Furnace Co., 118 S. Clinton St., Chicago 6. It is available in 28 gage and 4, 5, 6, 7, and 8 in. diameters. Recommended by the manufacturer for perimeter and high velocity systems and crawl space installations, the duct is assembled by a slight hand pressure. One end is crimped and beaded.

Conditioner for Casement Window Installation

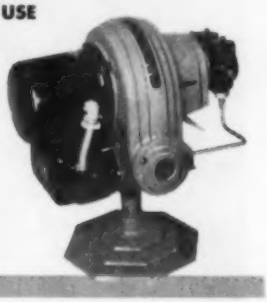
WINDOW TYPE air conditioner designed to fit casement windows and controlled by pulling out the front "drawer" panel — Servel Inc., Evansville 20, Ind. The room cabinet is 14½ in. wide and is designed to fit 197 different types and sizes of casement windows too small

sell more -- faster -- with

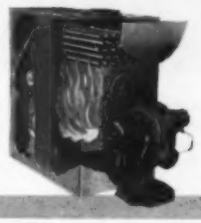
Radiant

Radiant OIL BURNER FOR RESIDENTIAL, COMMERCIAL, INDUSTRIAL USE

A Complete Line . . . ¾-30 gals. Shell Head Models ½-10 gals. Unsurpassed burner performance . . . competitively priced . . . factory guarantee . . . easy installation . . . minimum servicing . . . low upkeep . . . nationally distributed . . . protected territories.

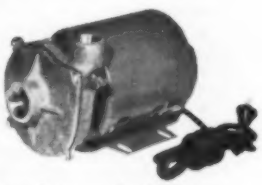


Radiant OIL FIRED WINTER AIR CONDITIONER



Superior in design . . . Economical in price — installation — operation. Available in four models: Low Boy, Suspended Unit, Hi Boy, Counterflow. Factory assembled and shipped complete.

Radiant UTILITY PUMP



Discharges waste water from laundry tubs, washing machines and other fixtures or appliances located below sewer outlets. For draining water tanks and swimming pools, circulating water in cooling systems, agitating and pumping water in displays, and in photographic laboratories, etc. All bronze construction, dynamically balanced impeller, rotary type seal.

Radiant AUTOMATIC ELECTRIC SUMP PUMP

For all Drainage Problems—boiler, elevator and grease pits, cellar and basement sumps, water transfer for irrigation. Permanent, silent, trouble free operation. All bronze construction . . . dynamically balanced impeller . . . perfect alignment for mirimum parts wear . . .3200 gals. per hour.

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RADIANT OIL BURNER

How to Find and Keep New Business During Your "Slack Period"

There's no "slack period" in the furnace and boiler cleaning business. The cleaning business keeps your service crews busy all year, contacts and KEEPS new customers by firmly establishing you as as authority — the man to call for all other heating needs.

Join the many others who are building cleaning businesses this year with high quality Premier Furnace and Boiler Cleaners. Premier machines are the world's most widely used furnace cleaners!

- Separately ventilated motor — prevents burnouts on hot jobs.
- Extra large filter area — for continuous, on-the-job operation.
- Dual purpose — powerful vacuum unit PLUS portable hand blower.

Premier Furnace Cleaners, the oldest name in the furnace cleaning business, make cleaning jobs easy, keep the jobs profitable. Compact, easy to handle, a low cost Premier Cleaner allows one man to average four profitable jobs a day. And customers like the way Premier units handle messy work so thoroughly and quickly.

PREMIER

755 Woodlawn Avenue, St. Paul 1, Minnesota

TAKE THE FIRST EASY STEP TO A NEW, MONEY-MAKING BUSINESS — WITH THIS COUPON Be ready for the warm-weather slack period. Act now!

PREMIER COMPANY, Dept. 406
755 Woodlawn Ave., St. Paul 1, Minnesota

Without obligation, please send complete details on the Premier Furnace Cleaner.

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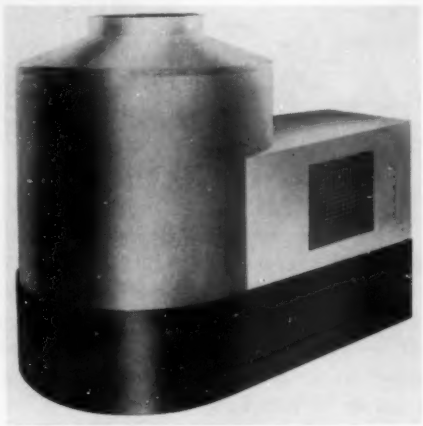
CITY .....ZONE ..... STATE .....

equipment developments . . .

to accommodate conventional window type conditioners. The new cooler may also be used with standard windows. For control, the "drawer" is pulled out to one of three different positions — the first providing ventilation alone; the second, cooling and ventilation; the third, maximum cooling. Grilles are set at 45 deg angles and a cleanable filter is provided. The unit is available in 1/3 and ½ hp models.

Evaporative Condenser

"WATER SAVER" evaporative condenser for use with air conditioners, which uses a rotary jet type water distributing system designed to keep the refrigerant condensing coil completely covered with water at all times, cutting power consumption — Yorktowne Machine Co., Inc., 538 S. Queen St., York, Pa. A counterflow design, using air in sufficient quantity to remove the heat from the



water, increases the efficiency of the unit, the company states. The heat is carried outside through the wall or roof by a 10 in. round duct. A maximum of 2 per cent of the water required for water cooled operation is needed as make-up water, according to the manufacturer. The unit is offered in two sizes, for 3 and 5 hp air conditioners. The larger unit is 36 in. long, 22⅛ in. wide, and 25 in. high, including a refrigerant receiver, condenser, fan, jet water distributor, pump and the necessary valves.

Motor with Integral Independent Fan

TOTALLY ENCLOSED d-c motor which has an integral, independent fan — General Electric Co., Direct Current Motor and Generator Dept., Schenectady 5. Developed for use in the ventilating systems of machine tool, paper, cement, chemical, rubber, and steel mill industries and other severe atmospheres, it is available in ratings from 15 to 200 hp. The company states that the motor features 50 per cent greater heat transfer in a 37 per cent smaller unit than its previous designs. Cooling units mounted completely within the overall length and width of the motors, permit operation at low speeds for long periods, since ventilation is inde-

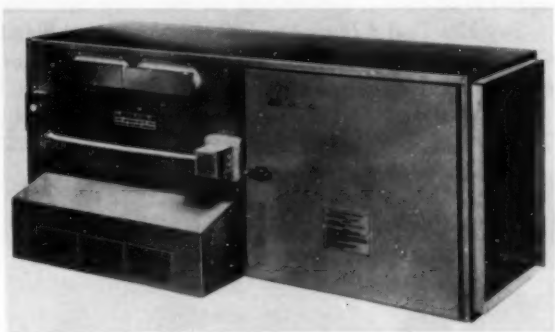
pendent of motor speed. The new motors are available in the same speed and horsepower ratings as standard constant, or adjustable speed general purpose motors.

Oil Space Heater

MODEL H-815 oil space heater for small homes, designed to deliver 59,000 Btu — Perfection Stove Co., 7609 Platt Ave., Cleveland 4. The heater has a "Multi-Heat" burner, a burner level lighter opening. a combination oil control and constant level valve, a fuel line cleanout facility, a finger-tip heat selector and an automatic draft regulator. The heater top is removable for dusting of inner parts.

Gas Fired Horizontal Furnaces

THREE NEW gas fired horizontal furnaces in 85,000, 100,000 and 140,000 Btu sizes — The Coleman Co., Inc., St. Francis and 2nd St., Witchita 1. They may be installed in attics or suspended from the ceiling or in crawl spaces, and are adaptable to almost all types of houses and small commercial buildings, the company states. Parts are interchangeable so that the flue outlet



and controls are accessible from either side, permitting the furnace to be installed as either a right or left hand unit. The two smaller units are side vented; the largest is top vented. Air delivery is designed to be fully adjustable to fill the requirements of conventional, perimeter and small duct systems. The combustion chamber is a series of airfoil-shaped, heavy gage metal tubes positioned above a cast iron slotted port burner. Standard controls include a room thermostat, solenoid valve, etc.

Summer Air Conditioners

NEW 1954 "MOR-SUN" summer air conditioners, designed to complement a complete line of forced warm air furnaces — Morrison Steel Products, Inc., 601 Amherst St., Buffalo 7. Designed for residential central cooling or commercial floor installations, models are available in 2 and 3 ton refrigeration capacities. Both models require 24 3/8 × 22 in. of floor space, and are 60 3/4 in. high. The front panel is removed for servicing. Units feature a hermetically sealed unit using "Freon" as the refrigerant. They control temperature, humidity, ventilation, air

...industry approved

A-LUM-O-AIRE

PERMANENT FILTER

now available to MR. and MRS. homeowner!

A-LUM-O-AIRE is a permanent "dry" type air filter designed for top efficiency in all forced air heating, air conditioning and ventilation applications. It is of all-metal construction and is completely rustproof and fireproof. No oils or adhesives are required. Frames are of aluminized steel with welded corners for extra strength. Mat retainers are made from heavy-gauge expanded steel and plated after cutting to size.

The filter media of ALUMO Aluminum wool consists of continuous strands with no short fibers. In a 20x20x2 filter there is an area of over 59 square feet with millions of tiny barbs which effectively catch and hold the dust. When dirty, A-LUM-O-AIRE is easily cleaned by flushing with cold water. It is designed to last the life of an ordinary furnace. A-LUM-O-AIRE filters are available in all standard 1" and 2" sizes. Special sizes can be made to order. Copper wool filter media with copper--plated mat retainers are also available. A-LUM-O-AIRE filters can be loaded with the proper filter media to meet any specific requirement.

Wherever quality, performance and permanance is desired you'll find the installation of A-LUM-O-AIRE filters pay off in satisfaction and economical maintenance cost.

Manufacturers Agents, Sales Representatives and exclusive distributorship inquiries are invited. This is an opportunity to get in on the ground floor with a product they ask for today and will demand tomorrow. Sales and advertising helps to meet local requirements.

INQUIRIES GIVEN PROMPT ATTENTION

METAL WOOL DIVISION OF
CAREY ELECTRONIC ENG. CO.
SPRINGFIELD, OHIO

circulation and cleanliness, and are equipped with a replaceable air filter.

Convertible Oil and Gas Fired Furnaces

OIL AND GAS FIRED counterflow furnaces, pre-assembled and prewired at the factory, in a variety of capacities — The Williamson Heater Co., 3500 Madison Rd., Cincinnati 9. The oil furnace is available in capacities of 100,000, 119,000 and 145,000 Btu. The burner is the pressure atomizing type, flange mounted with three heavy stud bolts for easy installation or removal. The gas furnace is available in four models ranging in capacity from 70,000 to 140,000 Btu. The burner is the upshot, single port type, with an orifice plug for natural gas and a blank orifice tagged with drilling instructions for fuel conditions in different localities. Both gas and oil furnaces are designed for complete front servicing. For each type, another burner can be substituted if the home owner cannot obtain the original fuel later; interchangeable prewired oil and gas burners are available. The heat exchanger is hot rolled steel with 100 per cent primary radiating surface, the manufacturer states.

EQUIPMENT BRIEFS

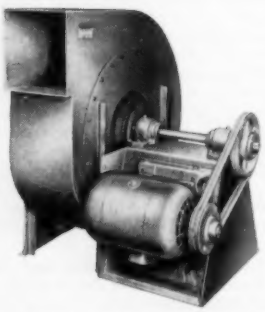
SOLDERING IRON FURNACE designed to heat two 4 lb irons from room temperature to 900 F or one iron to 1200 F in less than eight minutes, with a heat input of 9100 Btu per hr — Selas Corp. of America, Erie Ave. and D St., Philadelphia 34. It utilizes a radiant gas fired burner located so that damages from mechanical shock and flux corrosion are negligible, the company states. A tilted shelf keeps most of the heat away from the operator.

"SPEEDY-CALS" metal nameplates, designed for easy fastening to curved as well as flat surfaces without requiring the drilling of holes — North Shore Nameplate Co., Bank of Manhattan Bldg., Bayside, L. I. They are said to permanently adhere to glass, metal, and other surfaces, and are made of 0.003 foil, laminated with transparent bonding material.

RECTIFIER TYPE 500 amp cycle welder designed to maintain stable welding conditions regardless of arc variations when the shielded inert gas metal arc process is being used — Miller Electric Mfg. Co., Inc., 718 S. Bounds St., Appleton, Wis. It consists of a three phase transformer, saturable core type three phase reactor in the primary circuit, control windings, and a selenium rectifier stack.

"POWER HACK-SAW" reciprocating saw attachment designed to fit both 1/4 in. and ½ in. electric or air drills — Saw-Mor Tool & Blade Co., 520 Machinery Hall Bldg., Chicago 6. It attaches directly to the drill spindle, or may be inserted into the drill chuck.

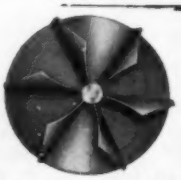
CHOOSE A BETTER FAN TO DO THESE JOBS



Sturtevant Industrial Fans come in four standard arrangements for integral or separate motor drive, belted or direct-connected.

FOR EXHAUST AND CIRCULATION
Select the efficient Air Handling Wheel for smoke, fumes, gases or light dusts; for even circulating, heat treating, process and product cooling. Uses smaller motors.

FOR MATERIAL HANDLING
Select the Material Handling Wheel, especially designed for exhausting grinding and buffing wheels; conveying granular materials, chips and sawdust.



FOR STRINGY MATERIALS
Select the Long Shavings Wheel, especially designed for long, stringy, fibrous materials which must pass through the fan.

Catalog 1150 gives complete data on this fan and its 3 wheel types. Call your local Westinghouse-Sturtevant office, or use this coupon.

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Westinghouse
AIR HANDLING

J-80292

Westinghouse Elec. Corp.
Sturtevant Division, Hyde Park, Boston 36, Mass.
Please send me Catalog 1150 on the Industrial Fan.
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Company_____
Title_____
Address_____
City_____ Zone___ State_____

new literature . . .

Aluminum Roofing and Siding

CORRUGATED ALUMINUM roofing and siding is described in A.I.A. File No. 12C (16 pages) — Aluminum Co. of America, 804 Alcoa Bldg., Pittsburgh. Application methods are outlined and accessories such as flashing, ridge roll and closure strip are detailed. Drawings present roofing and siding details on basic types of structures.

Fan Engineering Data

VENTILATION ENGINEERING information, including fan laws and formulas, terms and definitions, recommended velocities for exhaust hoods, etc., is presented in bulletin A-108 (16 pages) — Hartzell Propeller Fan Co., Piqua, Ohio. Illustrations show various models of fans, blowers, roof ventilators, unit heaters, etc., manufactured by the company, and the accompanying text recommends specific applications.

Powder Actuated Stud Driver

BULLETIN 1401-2 ILLUSTRATES and describes the design, operation and various applications of Model P stud driver, a portable powder actuated tool for driving steel studs into steel, concrete or masonry — Velocity-Power Tool Co., 201 N. Braddock Ave., Pittsburgh 8. Blank cartridges are used to drive steel studs in a single operation. Cartridges employed are 0.32 and 0.44 caliber, center fire type, in a series of loads for different applications.

Metal Protective Chemicals

METAL PROTECTIVE and paint bonding chemicals and processes are described in an illustrated folder — American Chemical Paint Co., Ambler, Pa. Selection charts show method of application, type of coating, typical metal products treated, coating time, etc.

Rail for Constructing Air Turning Vanes

MANUAL SHOWS pictorially how air turning vanes can be constructed and assembled in square or change-of-size elbows by using "Duro-Vane-Rail" — Duro-Dyne Corp., 38 S. Franklin St., Hempstead, L.I., N.Y. Advantages claimed by the manufacturer include low cost and simplicity of construction.

Automatic Air Filters

BULLETIN 500 (12 pages) covers "Staynew" automatic filters designed for large ventilating systems — Dollinger Corp., 11 Centre Park, Rochester 3, N. Y. Included are specifications and engineering and performance data covering automatic filters in a wide range of sizes.

Basement Heating and Ventilation

CIRCULAR F2.0 on basements contains a section pointing out the value of heating, insulating and ventilating the basement — Small Homes Council, Mumford House,

SAVE TIME—MONEY 5 WAYS

with Steinen Draft Regulators

- *Scaled for FAST—EASY—ACCURATE draft setting.*
- *True balance at all draft settings— Front and rear weights move at same time*
- *Less bearing surface Non-clog, non-bind bearings*
- *Exclusive leveling feature*
- *Two models fit 90% of all requirements.*

OTHER STEINEN PRODUCTS:
OIL BURNER NOZZLES
INSPECTION MIRRORS
NOZZLE KITS
ADAPTERS

Contact your jobber or write us for additional information.

ESTABLISHED 1907 — STEINEN TRADE MARK — WM. STEINEN MFG. CO. 43 Bruen St., Newark 5, N. J.

MANUFACTURERS OF ACCESSORIES FOR OIL HEATING AND AIR CONDITIONING

Here's why AGITAIR FM AIR FILTERS are so doggone popular!

High velocity...highest efficiency.

⅓ less space required.

Lower installation and maintenance costs.

Long serviceable life.

Designed for an approach velocity of 530 fpm over the net media area, the high filtering efficiency of the AGITAIR FM increases as the dust load is applied. You save ⅓ in space required, in number of units to be installed and serviced. Very large dust-holding capacity of AGITAIR FM assures longer service periods, fewer cleanings per year, lower service charges. No exposed wire ends to cut or damage hands of service operators. Compare. Send today for free Cost Comparison Chart.

AIR DEVICES INC.
185 Madison Avenue, New York 16, N. Y.

FILTERS • AIR DIFFUSERS • EXHAUSTERS

new literature . . .

University of Illinois, Urbana, Ill. Types of insulation best suited for basement application, methods of supplying a small amount of heat, and ways to ventilate are described. Price of the booklet is 10 cents.

Terne Metal Roofing

ROOFING BULLETINS R953 and W1053 contain descriptions of the physical properties, design characteristics and user benefits of terne metal roofing — Follansbee Steel Corp., 140 Stanwix St., Pittsburgh 30. Information is included on composition of the metal, thickness, terne alloy coating, etc. Line drawings are used to illustrate 10 applications of terne metal for roof weathersealing. Bulletin R953 gives technical information on standing seam, flat locked seam and batten seam roofs; W1053 covers the use of terne metal for valleys and weathersealing as well as roofing applications.

Arc Welding

ARC WELDING TECHNIQUES for joining many types of steel and iron are described in the new 456 page book, Farm Arc Welding — The James F. Lincoln Arc Welding Foundation, 22801 St. Clair Ave., Cleveland 17. Although the title of the book indicates its application to farm uses, the techniques apply to construction of heavy ductwork, equipment supports and the fabrication of sheet metal products. Subjects covered include arc welding fundamentals, butt welding, fillet and lap welding, welding in vertical and overhead positions, arc welding of cast iron, cutting cast iron and steel and piercing holes. Instructions are also given for selecting an arc welder, selecting the best electrode for the job, operating and caring for welding equipment, and identifying various metals. The price of the book is $2.00.

Heat Pumps

ALL-ELECTRIC heat pumps designed to provide year 'round comfort are described in a four page bulletin — Westinghouse Electric Corp., Air Conditioning Div., Dept. T-557, 200 Readville St., Hyde Park, Boston 36. A complete explanation of the heating and cooling cycles of the unit is presented, supplemented by schematic flow diagrams of the refrigerant and air.

Translucent Building Panels

TRANSLUCENT PANELS made of glass fiber reinforced polyester resins, which can be used for awnings, patio roofing, partitions, skylights, etc., are described in a 16 page illustrated brochure — Plexolite Corp. of California, 2051 E. Maple Ave., El Segundo, Calif. The material can be sawed, drilled or nailed with ordinary tools, and the manufacturer states that it will not warp, rot, sag, rust or buckle. It is produced in 12 colors, is available in a variety of lengths and widths.

(*Please turn to page* 148)

we hear that . . .

THE RECENTLY OPENED Union, N. J., office of Minneapolis-Honeywell Regulator Co. features a modern zone-heating system operated by three different types of control equipment — electric, electronic and pneumatic

MINNEAPOLIS-HONEYWELL Regulator Co. has opened a new 16,000 sq ft office building on Route 22 on the outskirts of Union, N. J. It will serve as headquarters for the company's heating sales and service activities in the northern and central counties of New Jersey and two southern counties of New York.

A NEW DIVISION of American Radiator & Standard Sanitary Corp. — the Amstan Supply Div. — has been created to take over all operations of the corporation's former branch house department. Headquarters of the new division are in Pittsburgh. Branches are located in 22 states in the midwest, southwest and Pacific Coast areas. Amstan branches supply materials required for heating and air conditioning installations as well as appliances. Executives of the division are Robert F. Sells, president, and Joseph Salamone, executive vice president.

"GOOD RESPONSE" has been obtained from large space advertising in a local weekly newspaper by C. M. Glovier, general manager, Glovier Bros., Iron Fireman Mfg. Co. dealer in Aliquippa, Pa. About $125 a month goes into the weekly newspaper advertising. The firm maintains a showroom, completed in 1953, at 277 Franklin Ave., Aliquippa.

L. P. Krause has purchased Hess & Meyer, Inc., La-Crosse, Ind., Iron Fireman heating equipment distributor. The firm maintains a complete sheet metal and service department.

HAROLD S. SHARP, SR., president of the Sharp Heating & Supply Co., Cleveland, presented his customers with a truly "different" gift last Christmas — a share in a $400 Christmas donation to the Addison Road YMCA. After informing YMCA officials that the gift was being made on behalf of his customers, Mr. Sharp wrote each of his customers a letter explaining that "in planning for Christmas this year, it seemed to us that a donation to a worthwhile charitable organization in your name would be in keeping with the true spirit of Christmas. We believe

Shed those design shackles, specify

AGITAIR

You can give free rein to your creative planning and still rely on AGITAIR square and rectangular diffusers to provide draftless air distribution from any location. Custom-designed, with built-in diffusing vanes, in a wide variety of louvered patterns, they provide blows in 1, 2, 3 or 4 directions without use of blank-offs. AGITAIR diffusers need not be centrally located in an area if such placing does not agree with the decorative motif, or if a beam or other obstruction is in the way.

Moreover, AGITAIR square and rectangular diffusers are now available with or without removable, interchangeable cores. AGITAIR also brings you Stripline, the slender, continuous air diffuser with unlimited application versatility.

New 34-page Type R Catalog reveals how correct air distribution is simplified by AGITAIR. Contact your local AGITAIR representative, or write us direct for your free copy.

AIR DEVICES INC.
185 Madison Avenue, New York 16, N. Y.

AIR DIFFUSERS • FILTERS • EXHAUSTERS

Now — go to town with the ALL-TITE VANE RUNNER

TRADE MARK

Quickest, cheapest way to install vanes in square elbows

Blades are cut raw from your scrap... double blades formed with flanges as shown above. Units can be stacked for extra height, overlapped for additional length.

THEY'RE LEARNING the same thing in shops all over the country... that the *Elgen All-Tite Vane Runner* literally slashes the cost of fabricating and installing turning vanes. The *All-Tite Vane Runner* does away with all punching, notching, riveting, spot welding and layout... *requires absolutely no special chisels or tools!*

The new, improved *Elgen All-Tite Vane Runner* is made of 24-gauge galvanized steel. It is engineer-approved and accommodates either single or double blades. Vanes are locked into the unique slotted knobs in "next to no time" with shears or hammer. Finished unit is quickly fitted in elbow, fastened with screws, and is perfectly rigid and rattleproof.

The *Elgen All-Tite Vane Runner* comes in 8-ft. strips, 20 per bundle. Order from your jobber and, if necessary, ask us for your quickest source of supply. And write for the whole story, plus engineering data.

PAT. PEND.
UNION MADE

A. F. of L.

Elgen Manufacturing Corporation
Dept.A-2, 41-34 39th Street
Long Island City 4, N. Y.

ELGEN

ALL-TITE VANE RUNNERS

FASTEST ... MORE PRACTICAL AND ECONOMICAL

we hear that . . .

you will enjoy making your contribution to the mental, physical and moral development of our youth—where the need is great."

JOSEPH T. RYERSON & SON, INC., has moved from its former location in Milwaukee to a new plant located at 500 S. 88th St. The plant has approximately 170,000 sq ft of floor space — four times the capacity of the old plant. Previously the Milwaukee plant concentrated its service in the city and immediately surrounding area. Now the territory served includes almost the whole state of Wisconsin, the upper peninsula of Michigan, and a small part of Canada.

SHEET METAL machinery will be displayed March 16 to 20 at the Bristol Metal Working Equipment's new plant in East Hartford, Conn.

BRISTOL METAL WORKING EQUIPMENT is planning a sheet metal machinery show to be held March 16 to 20 in its new building at 35 Sullivan Drive, East Hartford, Conn. Among the exhibitors will be Niagara Machine & Tool Works, showing its complete line of machinery, including a new press brake; Stanley Electric Tools Div., The Stanley Works, exhibiting "Unishears" and drills; Dreis & Krump Mfg. Co., displaying "Chicago" brakes; The Lockformer Co., showing Pittsburgh lock formers and slitters; Whitney Metal Tool Co., demonstrating punches, presses, etc.; Fallsington Mfg. Co., exhibiting blanking and forming presses; and Beverly Shear Mfg. Co., displaying shears. All equipment will be shown in operation.

THE PLEXOLITE CORP. OF CALIF. has opened a new plant located at 2051 E. Maple Ave., El Segundo, Calif. David S. Perry, president, anticipates a 1954 sales total of between 5 and 10 million sq ft of translucent building panels.

THE GAS INDUSTRY'S 1954 sales promotion campaign includes national promotion programs sponsored by the American Gas Association and the Gas Appliance Manufacturers Association. National advertising by manufacturers will supplement association operation.

we hear that . . .

The industry's Sales Promotion Plan Book schedules the timing of product promotion from the February-March drive to the November-December campaign. Patterned to complement the "Action Program for Gas Industry Development," the book is designed to provide the means of implementing all of the promotional aspects of the program. Available for the various phases of the 1954 sales drive are floor and window display materials, billboard posters, demonstration kits, consumer literature, sales training aids, etc. The "big push" for house heating and air conditioning is scheduled for April, May and June.

CORY CORP. territory and divisional sales managers board a bus for a trip to the Fresh'nd-Aire Co.'s Grayslake, Ill., plant

THE 1954 LINE of "Fresh'nd-Aire" year 'round room air conditioners was presented to 50 territory managers and divisional sales managers of the Cory Corp. at the recent national sales conference held in Chicago. J. W. Alsdorf, president, gave a short talk reviewing the progress made by the corporation and its divisions. Objectives of the sales conference were covered by N. H. Schlegel, vice president in charge of sales and advertising. The 1954 air conditioner sales program and distribution policy was covered by Harry Roehm, domestic products national sales manager, who also outlined the 1954 air conditioning advertising and sales promotion program.

THE CLEVELAND office of Dravo Corp., Machinery Div., is now located at 4207 Chester Ave., Cleveland 3.

THE HOME HEATING and Cooling Department of the General Electric Co. has opened its 1954 application and service schools. The schools are being held at Bloomfield, N. J., and at 29 other locations throughout the country. They are open to all independent dealers and servicemen and all G.E. distributor and dealer organizations.

WALTER F. ROCKWELL was recently elected chairman of the board of Aero Mfg. Co. F. G. McCloskey has been named president, succeeding F. P. Maxwell. While the company's national headquarters will remain in Columbus, Mr. Rockwell will maintain additional offices in Detroit.

You'll save up to 50 per cent with the new SILENT DUCT

TRADE MARK

Pre-assembled metal and material pulls out flat and ready to use

LET'S PUT IT THIS WAY...you need some flexible duct connections. As the first step, you attach canvas or asbestos to strips of metal...a job that takes time and costs money. In shop after shop 50% to 60% is being *saved* today by using *Elgen Silent Duct*, the new connection material that comes to you pre-assembled for immediate fabrication.

Elgen Silent Duct is delivered in 100-foot (approx.) coils in a handy dispenser... *pulls out absolutely flat* and ready to use. It is made of 24-gauge galvanized steel, fastened to your choice of fire, water and mildew-resistant canvas (Govt. Spec. MIL-D-10860) or to heavy, top quality asbestos.

Order *Elgen Silent Duct* from your jobber and make savings that really help you get business. If necessary, ask us for your nearest source of supply. And write us for new free folder that tells the whole *Silent Duct* story. **Elgen Manufacturing Corporation, Dept. A-2, 41-34 39th St., Long Island City 4, New York.**

PAT. PEND.
UNION MADE

A. F. of L.

ELGEN
SILENT DUCT
SAVES ASSEMBLING CONNECTION MATERIALS

we hear that . . .

FURNACE DISTRIBUTORS and dealers for Perfection Stove Co. gathered in Cleveland to hear about the company's new air conditioning equipment

A NEW LINE of residential and commercial room air conditioners was introduced by Perfection Stove Co. to its furnace distributors and dealers at a recent night meeting held in the company's engineering research center.

THE NEW LOCATION of the Oklahoma City sales office of the Trane Co. is 819 N. Virginia St. E. M. Jameson is sales engineer in charge of the office.

CHARLES B. SWEATT has been elected to the newly created post of vice chairman of the board for Minneapolis-Honeywell Regulator Co. Mr. Sweatt has served as executive vice president since 1945. Tom McDonald and A. M. Wilson — formerly vice presidents — have been elected executive vice presidents. In their new posts they will assist Paul B. Wishart, president, in carrying out managerial duties at the policy making level.

THE TORRINGTON MFG. CO. recently completed a 48,000 sq ft addition to its facilities. The new addition is air conditioned throughout.

AIR REDUCTION SALES CO. has produced a sound slidefilm on safety in the use of oxyacetylene cutting and welding equipment. Designed for companies to use in training their employees, the film treats a variety of factors affecting safety. Those interested may arrange for free showings of the film by getting in touch with local branch offices of the company. Additional information may be obtained from the company's office at 60 E. 42nd St., New York 17.

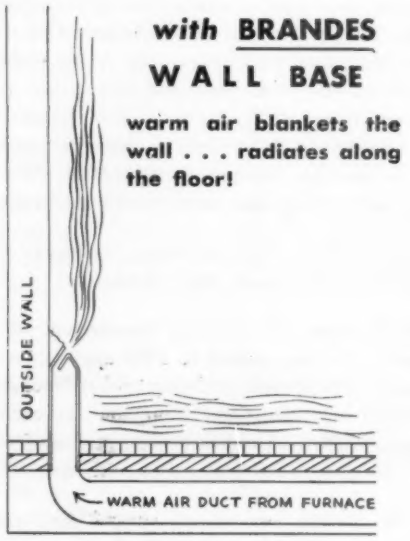
WALLACE R. PERSONS has been elected president and a director of the Emerson Electric Mfg. Co. Mr. Persons has been vice president and general sales manager of the Lincoln Electric Co. for the past seven years. He succeeds W. S. Snead, who will remain as board chairman.

BRYANT HEATER DIV., Affiliated Gas Equipment, Inc., has developed a "target plan" for merchandising room

THE BEST is BRANDES*

Brandes Wall Base, for forced warm air heating systems is the *first*, and the *finest!* Experiments are over . . . it's proved performance at low cost! Write The Brandes Company, 2046 Winnebago Street, Madison 4, Wisconsin.

***PATENTED**
WALL BASE HEATING



we hear that . . .

air conditioners. The plan is designed to guide dealer sales promotion activities into proven, profitable channels. It includes a suggested plan of action, a customer contest, a free home trial plan, an advertising program, and point of sale tools such as displays, literature, posters and photographs.

The company has established a field training team of product and sales specialists to give dealers complete schooling in the air conditioning field, with emphasis on sales promotion and merchandising activities.

PERSONNEL of A-P Controls Corp.'s authorized service stations get complete training in the maintenance and repair of oil controls. Proper assembly and disassembly of valves is being demonstrated

FRANCHISED SERVICE STATIONS for repairing A-P Controls Corp.'s oil controls are being supplied by the company with test racks and hand tools needed for proper calibration and testing of the controls. Repair men attend a three day school held at the Milwaukee plant where they learn new repair techniques, proper disassembly methods, repairing and calibrating.

ARTHUR C. WILBY has retired as vice president of United States Steel Corp. He is succeeded by Edward C. Logelin. Mr. Wilby joined the company in 1930, and has been vice president since 1946.

WW ALLOYS, INC., Div. of Fansteel Metallurgical Corp., is the new name of Weiger Weed & Co. Robert J. Aitchison, chairman of the board, says that the change was made to provide a name more truly descriptive of the division's products and activities.

THE USE OF A SURGE comparison tester to check motor windings has enabled Airtemp Div., Chrysler Corp., to eliminate almost entirely electric motor failures due to differences in the phase windings, according to company sources. With the motor under field test conditions, the surge comparison tester suddenly discharges an impulse from a condenser into the motor windings. The discharge is for a short duration and is repeated at a rate

special fasteners
by NATIONAL LOCK
fit your production picture
save time, labor, money
Many manufacturers have found National Lock the ideal source for their complete fastener requirements. National Lock is able to supply you with specific fasteners for specific jobs . . . resulting in a saving of production time and material costs. Turn your fastener problems over to us. Our skilled sales engineers will recommend efficient, money-saving fasteners for your jobs. Order screws, bolts and all your interior and exterior hardware the simplified "All From 1 Source" way . . . from National Lock. Deliveries are dependable.
distinctive hardware . . .
"ALL FROM 1 SOURCE"
NATIONAL LOCK . . .
market basket for industry
SCREWS • BOLTS • HANDLES • PULLS
CATCHES • HINGES
NATIONAL LOCK COMPANY
Rockford, Illinois

3 ways to MODERNIZE oil burner installations

install VENTALARM®
Whistling Tank Fill Signal

Here's the way to provide for modern, automatic oil delivery. Guarantees accurate, no-spill fills day or night, whether customer is at home or away.

"Just Fill While the Whistle Blows"

A variety of models for new and old tanks.

install
SCULLY® GAUGE
Underwriters' Approved

A modern convenience in every way. Big figures readable at first glance. Face adjustable to any angle. Built for accurate, service-free operation. Specify tank depth when ordering.

"BUTTON-LIFT" INSTALLATION

Lifting the button indicator draws cork arm up close to main shaft for easy installation even in partly filled tanks.

or install this combination . . .
VENTALARM® GAUGE
Underwriters' Approved

The famous whistling fill signal and easy reading gauge in one modern unit. Goes on tank as integral part of vent pipe.

Specify tank depth and opening when ordering.

One item to install instead of three . . . with button-lift convenience described above.

Scully Products are manufactured under U.S. and foreign patents or patents pending.

See your regular Supply House.

SCULLY SIGNAL COMPANY

174 Green St., Melrose 76, Mass.

Canadian Licensee: EMPIRE BRASS MFG. CO., LTD., London, Ontario

©1953 Scully Signal Co.

we hear that . . .

of 60 impulses per second. Any differences in the phase windings are projected in double trace on a cathode ray oscilloscope.

Martin Hopwood, president, Majestic Distributors, has recently signed a contract to distribute the company's residential air conditioners and furnaces in Westchester county, N. Y.

C. M. Ashley

CARLYLE M. ASHLEY, chief staff engineer for Carrier Corp., as second vice president of the American Society of Refrigerating Engineers. Mr. Ashley served the society as treasurer during 1953. Since becoming a member almost 20 years ago, he has been chairman of both the research and program committees, member of the executive committee and council, and has worked on many other committees.

G. C. BREIDERT CO. has moved into its recently completed factory on San Fernando Rd., Pacoima, Calif. The plant gives the company more than five times its former manufacturing area, and is planned to allow for future expansion.

TO MEET ITS rapidly growing production schedule, the Duro-Dyne Corp. has moved to larger quarters located at 800 3rd Ave., New Hyde Park, N. Y.

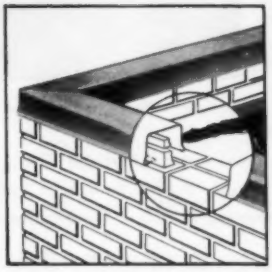
PANGBORN CORP. has made several additions to the equipment installed in its demonstration room. This room was developed by the company in order to solve blast cleaning and dust control problems in the shortest possible time through the use of full size equipment of all types. Complete reports are submitted to any customer who sends samples to the demonstration room for cleaning. Castings, forgings and heat treated parts have all been cleaned in the equipment on hand, to produce sample finishes. When a report is made it includes recommendations for the correct blast cleaning equipment, exact sizes and types of abrasives to be used, and other important information. New equipment added includes a "Rotoblast Blastmaster Barrel," developed for batch blasting of castings, and a full sized steel sheet blasting machine capable of handling sheets up to 54 in. wide.

APPROXIMATELY 100 distributors and representatives recently attended the national sales convention of the Deering Air Conditioning Co. at the Terrace Plaza Hotel and company offices. Thomas Deering, president, introduced 1954 models of air conditioners designed for casement windows.

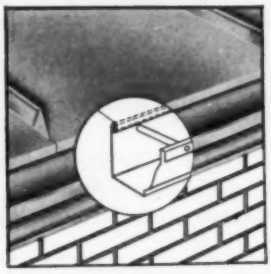
NOW is the time to TALK TERNE* for these weathersealing jobs

Window Flashing

*FOLLANSBEE TERNE METAL that is!



Parapet Coping



Molded Gutters

Alert sheet metal men will take advantage *now* of this year's big building market by "talking Terne" for weathersealing.

Follansbee Seamless Terne Metal is the ideal weathersealing material for built-up, composition, wood, asphalt or asbestos shingle, slate or tile roofs. Tough, durable and malleable, Terne Metal should be used for copings, eaves troughs, flashings, gravel stops, gutters and valleys.

Properly installed and maintained, Terne Metal will last as long—or longer—than any roofing material with which it is used. Terne can be installed easily and quickly. *Remember, expansion and contraction are never a serious problem with Follansbee Terne Metal.*

Leading distributors are prepared to supply you with this high quality Terne Metal in 40 lb., 20 lb. and 8 lb. coatings, in various widths from 4 inches to 28 inches, in 50 foot continuous rolls. Be sure to specify Follansbee Terne Metal the next time you need "Valley Tin" or "Roofing Tin."

FOLLANSBEE STEEL CORPORATION

GENERAL OFFICES, PITTSBURGH 30, PA.

Cold Rolled Strip — Seamless Terne Roll Roofing

Polished Blue Sheets and Coils

Sales Offices—Chicago, Cleveland, Detroit, Indianapolis, Kansas City, Los Angeles, Milwaukee, Nashville, New York, Philadelphia, Rochester, San Francisco, Seattle; Toronto and Montreal, Canada. *Mills*—Follansbee, W.Va.

FOLLANSBEE METAL WAREHOUSES

Pittsburgh, Pa. Rochester, N.Y. Fairfield, Conn.

PROTECTED FRANCHISE AREAS AVAILABLE!

Proof positive that we can reduce air-borne bacteria and viruses to a sanitary level.

FURNACE MODEL

for warm air systems

Add GLYCOLATOR*

AIR SANITATION to new and existing heating and air conditioning installations.

Every installation of this fast selling, low-cost Furnace Model GLYCOLATOR will add more dollars to your total sales along with desirable PLUS dollars of extra profit for your business operation.

The Furnace Model GLYCOLATOR was designed specifically for installation with existing or new warm air heating and air conditioning systems. The compact (10" high) Furnace Model is an electrically operated unit, easily attached to the side of the furnace or air conditioning unit and automatically vaporizes Glycosol. Thermostatically controlled — it protects every room evenly, efficiently and inexpensively — treats homes with furnaces of up to 120,000 B.T.U.

There is a complete line of heating, air conditioning and portable model GLYCOLATORS available for every application.

*Registered

Please send me full information on the profitable Glycolator sales plan.

NAME .....

COMPANY .....

ADDRESS .....

CITY ..... STATE .....

Glycolator DIVISION

IRON CITY CHEMICAL COMPANY

Valencia, Pa.

appointments . . .

EVERETT L. DAWKINS, Salem, Mass., as sales representative for the Williams Div., Eureka Williams Co. (Div. of Henney Motor Co., Inc.) Mr. Dawkins has had 14 years experience in the heating field, has instructed classes dealing with various types of domestic heating equipment and controls.

E. L. Dawkins

L. C. Kroes

LEONARD C. KROES as sales manager of the Brundage Co. Mr. Kroes has been with the Holland Furnace Co. as divisional engineer in charge of all field engineering in the northeastern states, with Detrex Corp. as sales manager in charge of the central states, and with the Kalamazoo Stove & Furnace Co., where he supervised wholesale and retail sales operations.

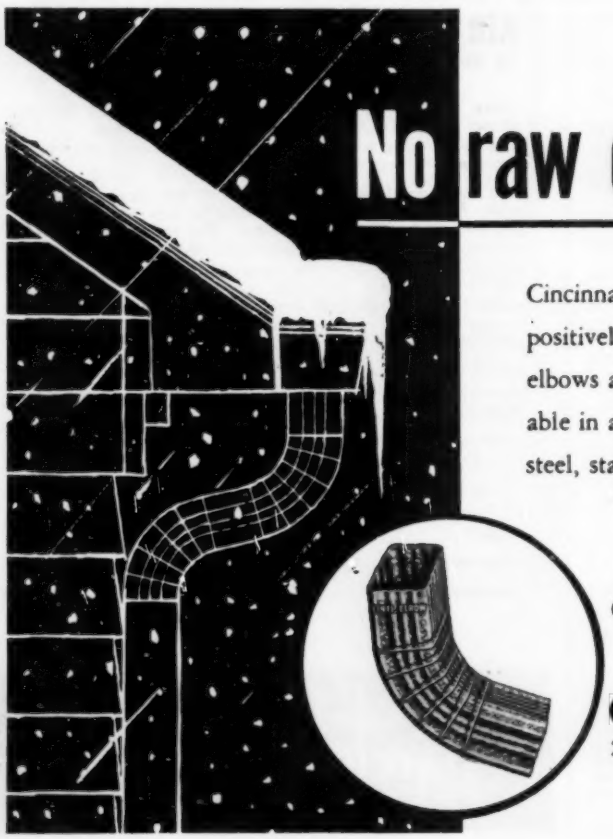
WILLIAM H. BAKER, JR., as vice president of the Sunbeam Air Conditioner Div., American Radiator & Standard Sanitary Corp. In his new position, Mr. Baker will be active in the development, production and sales of warm air heating and air cooling equipment as well as allied products. He joined the company in 1936 as western manager of the air conditioning division.

DAVID T. MORGENTHALER as vice president and director of sales for the Delavan Mfg. Co. Mr. Morgenthaler joined the firm in 1950 as sales manager. Patrick McKeown, formerly with Solar Aircraft Co., has been named production control manager.

D. T. Morgenthaler

W. S. Rheem II

WILLIAM S. RHEEM II as general manager of the Rheem Mfg. Co., succeeding C. V. Coons, a vice president and member of the board of directors, who has been named



No raw edges to rust...

Cincinnati Elbows, hot dipped in zinc *after* formation, positively guarantee a rust-proof longer life. These elbows are tapered to fit any size standard pipe. Available in any size, angle and metal, including galvanized steel, stainless steel, copper and aluminum.

Give your customers the best elbow available.

ASK YOUR JOBBER.

Cincinnati Elbows fit better because they're made better!

CINCINNATI ELBOW CO.

2021 EASTERN AVE., CINCINNATI 2, OHIO

WILDER MFG. Does It Again!

BENCH MODEL METAL SLITTER *SENSATIONAL*

IN WEIGHT, PERFORMANCE, ACCURACY AND PRICE

*Fast Accurate Clean Shearing
*Tolerances to 005" or less
*All steel cut reduction gears
*Embodies the light weight low cost features of the WILDER, JR. with the refinements found in the heavier duty models.
*Gears protected against dirt
*Sturdy all steel construction
*Oil impregnated porous bronze main bearings.
*Both blades power driven. High carbon, high chrome tool steel blades hollow ground and reversible for double life.
*Plugs into any 110V convenience outlet.

Model JB-20

SPECIFICATIONS

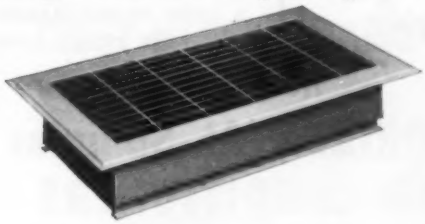
Capacity—20 Ga. mild steel
Speed of cut — 62½ ft. per min.
Horsepower — ⅓ 110V. 60 Cy. 1 Ph.
Shearing width — 1¼" to 24¼"
Length 33" Height 14½"
Width — with gage — 34" without 8¾"
Weight — Net — 72 lbs. Shipping 78 lbs.

WILDER

MANUFACTURING CO., INC.
Factory and Sales Office:
Rt. 2, Box 880, Carmel, Calif.

Depend on A & A for better registers every day...

Developed by George G. Auer



No. P-28 PERIMETER DIFFUSERS

A new popular style register for concrete slab, basementless type home installation. Designed so that air is diffused efficiently in a 100° arc.

Order in neutral Metallic or blended Oak Finishes.

No. F-20 FLOOR REGISTERS

Here is a strong and durable floor register that's designed to please the most discriminating home owner and the most exacting home builder.

Now available from our stock in three types of finishes, Metallic, Prime, or Oak.

Write for your copy of the A&A Register Catalog 53 for sizes and prices of all of the styles in our *Complete Line* of wall and floor registers.

A&A REGISTER

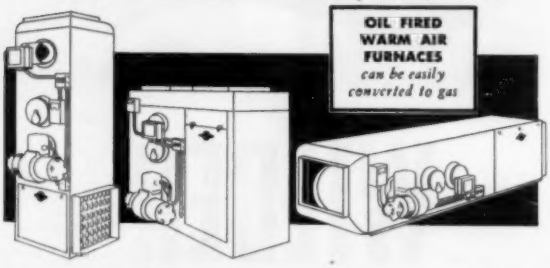
Your best buy every time

THE A & A REGISTER COMPANY
8327 CLINTON RD. CLEVELAND 9, OHIO

YOU ALSO GET THE
BIG SIZES
in the BESSER line!

A COMPLETE RANGE OF SIZES . . .
from 75,000 BTU to 500,000 BTU

A COMPLETE LINE OF MODELS . . .
Horizontal • Vertical • Basement
Downflo • HiBoy • LoBoy • Suspended



Plus SPECIAL ORDER SERVICE
on any size unit UP TO 1,000,000 BTU

For jobs that require units larger than 500,000 B.T.U., Besser offers fast, reliable Special Order Service. We have the facilities to build any type unit required, up to 1,000,000 B.T.U. output. Every "special order" is built to the same high standards of the regular Besser line. Whatever your need, we can build it!

And now! A NEW PROFIT-MAKER JOINS THE BESSER LINE
Revolutionary
HORIZONTAL Summer AIR CONDITIONERS
for Residential or Commercial installations

Combining space-saving "horizontal" design with an entirely new cooling principle, Besser Summer Air Conditioners bring central air conditioning within the reach of almost everyone. Designed for installation and operation in conjunction with central heating systems, units are fully adaptable to either warm air or hot water heating. Greatly increased efficiency lowers initial and operating costs through use of smaller units.

Available in 2, 3 and 5-Ton units.

"Only the BEST goes into a BESSER!"

BESSER WARM AIR FURNACES
Summer AIR CONDITIONERS
The Complete Line for Year-Round Profits

BESSER METAL PRODUCTS CORP., P. O. BOX 4064, CHARLOTTE, N. C.

appointments . . .

resident director in New York City. Mr. Rheem, who has been assistant general manager, will continue to make his headquarters at the company's South Gate plant in the Los Angeles area.

M. C. FLETCHER as chief engineer of the Dowagiac Steel Furnace Co. Mr. Fletcher has been with the company's engineering department for 14 years. He is presently serving on the committee for revision of installation manuals of the National Warm Air Heating and Air Conditioning Association. A new addition to the company's engineering staff is Maurice Petro, formerly with Rudy Mfg. Co. and Indiana-Michigan Electric Co.

R. L. PARKER as assistant to T. A. Clark, technical director of the Canadian chapter of the National Warm Air Heating and Air Conditioning Association. Mr. Parker has been associated with Engineering Industries Co. for the past five years.

R. L. Parker

D. W. Thomas

DAVID W. THOMAS as assistant to the president of Benjamin Wolff and Co. Mr. Thomas was previously with Jones & Laughlin as assistant general manager of sales.

WALTER R. LEANDER as eastern regional sales supervisor for U. S. Machine Div., Stewart-Warner Corp., directing the sale of "Winkler" products. He will work out of the company's home office at Lebanon, Ind. New district sales managers are Vernon J. Alt, Platteville, Wis.; Fred H. Bauer, Greenville, Ill.; Henry S. Goldsmith, Atlanta; William P. Lorentz, Oak Park, Ill.; Robert J. Skarda, Morristown, N. J.; Willard Zehr, Norwich, N. Y.; and Albert W. Green, Sumner, Wash.

MARTIN B. BELINE as district sales manager for Typhoon Air Conditioning Co., Inc. Mr. Beline will cover an eastern seaboard territory between New York City and Virginia, with headquarters in Philadelphia. Arden Krell has been named district sales manager for California, Arizona and New Mexico. His headquarters will be in Los Angeles.

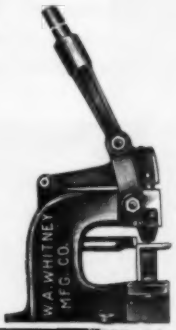
CLYDE E. ROBERTS as manager of sales for the alloy steel division of Republic Steel Products Corp., succeeding

YOUR BEST INVESTMENT

LEVER **WHITNEY** PUNCHES

PORTABLE HAND OPERATED PUNCHES AND SHEARS. A TOOL FOR EVERY PURPOSE. LEADERS SINCE 1907

NO. 91 BENCH PUNCH



Punches
Angle Iron
2½ x 2½ x ¼"
Channel Iron
2½ inch Flange x ¼ inch Web

Capacity
½ inch hole through ¼ inch iron, ¾ inch hole through 3/16 inch iron, 2 inch hole through ⅛ inch iron. Also No. 92 with 10" depth of throat, No. 93 with 18" depth of throat and No. 94 with 24" depth of throat.

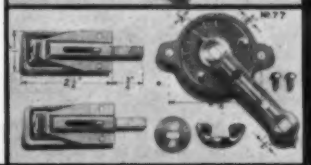
Please Write Today for Literature

See Your Jobber.

W. A. WHITNEY MFG. CO.
636 RACE ST. ROCKFORD, ILL.

H&C **KWIK-WAY DAMPER REGULATOR SETS**

No anvil required. Both bearings have retractable bolts for easier installation. Their convenience and time saving characteristics makes them by far the most economical sets when installed costs are considered. See your jobber or write for literature.



HART & COOLEY MANUFACTURING CO.
800 EIGHTH STREET HOLLAND, MICH.
IN CANADA: HART & COOLEY MFG. CO. FORT ERIE, N., ONTARIO

RINGS ALL TYPES

BAR, PIPE AND TUBE STOCK ACCURATELY ROLLED

Angles, tees, rounds, channels, flats, pipe and tube — all rolled in our plant to your exacting requirements, both as to production and delivery.

Leg out angle rings without holes are carried in stock in many sizes — furnished with or without bolt or rivet holes.

Write for list of stock sizes and discounts, also our circular describing our complete fabricating services.

Phone BIshop 7-4255

NATIONAL METAL FABRICATORS

2140 So. Sawyer Ave., Chicago 23, Ill.

TO YOUR INDIVIDUAL SPECIFICATIONS

WEBCO *the portable*

SHEET METAL BENDING BRAKE

The WEBCO brake offers the Slip End, Sliding Folding Fingers, and many other important features. The WEBCO will make bends up to 52°. Write for detailed information to:

HALLMOR INC.
McMURRAY ROAD
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Make Stronger Fastenings this easy way

P-K
TRADE MARK REG. U.S. PAT. OFF.

Hardened
Masonry Nails

DRIVE EASILY into mortar, cinder blocks, and other soft masonry without pilot holes . . . into pre-drilled holes in harder materials.
HARDNESS and TOUGHNESS perfectly balanced . . . they drive in straight to stay tight, even under shock or vibration.
COST YOU LESS and are much simpler to use than plugs, expansion bolts, other devices. Samples free . . . try them. Ask your P-K Distributor, or write: Parker-Kalon Division, General American Transportation Corporation, 200 Varick St., New York 14.

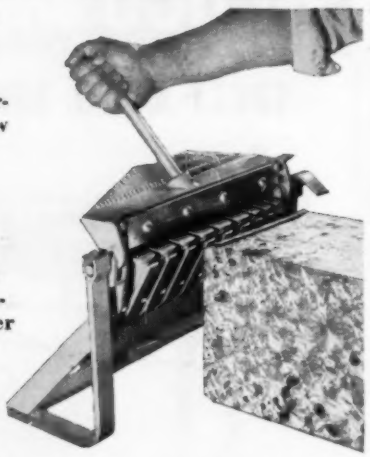
PARKER-KALON®
FASTENERS

FLANGES THE DUCT
IN LESS THAN 5 SECONDS

Works like a bar-folder with a new twist.

Handling the work back and forth has been eliminated by a unique manipulation of the bender itself.

"Best little tool in the shop"



No money tied up in idle equipment . . . And no time wasted in making adjustments . . . Fits any size ducts up to width of bender and any thickness up to 20 gauge mild steel.
No. 12 SMITH'S CLEAT BENDERS (12" Wide) $46.20*
No. 18 SMITH'S CLEAT BENDERS (18" Wide) $72.60*
*Prices subject to change without notice)
FOB Waukegan, Illinois

R. E. SMITH
P.O. BOX 78
1122-30 ELIZABETH WAUKEGAN, ILLINOIS

appointments . . .

Martin H. Schmid, who is retiring. Mr. Roberts will be in charge of all sales of alloy, stainless steel and titanium products. In 1936 he became assistant manager of sales for the division. He is being succeeded in that position by Sam A. Seckler, formerly assistant district sales manager of the company's Chicago district sales office. Russell L. Seiple has been appointed manager of steel products sales for the company's Berger Mfg. Div. Mr. Seiple was assistant manager of steel products sales for the division until his new appointment.

W. E. Falberg

R. W. Burt

A. J. Olson

WEAVER E. FALBERG as assistant general manager of sales of the 16 steel service plants of Joseph T. Ryerson & Son, Inc. Mr. Falberg, who was formerly manager of the alloy steel division, will headquarter in Chicago. Roland W. Burt has been appointed manager of the Chicago plant, a newly created position. Mr. Burt joined the company in 1923 and has served in various capacities. Prior to his recent promotion he was sales manager of the Chicago plant, in which position he is being succeeded by Alfred J. Olson, who was formerly assistant sales manager. Mr. Olson, with the company for 30 years, started at the Chicago plant and progressed through various departments, becoming a general sales representative in Illinois in 1936. He was made assistant sales manager of the Chicago plant in 1947.

STEPHEN CANFIELD as a member of the staff of Earnshaw Sheet Metal Supply Co. Mr. Canfield has been in the sheet metal, warm air heating and air conditioning field for 25 years. For many years he conducted sheet metal apprentice training classes in the Harrisburg school district.

GENE KOSKI as head of the newly established New York regional branch office of Drayer-Hanson, Inc. Offices of the new branch will be in the Architects Building, 101 Park Ave., New York City.

R. B. SNYDER as manager of the residential division of York-Shipley, Inc. Mr. Snyder will direct the activities of the company's nationwide distributor and dealer organization. He has been with the company for the past 11 years, starting as an assistant purchasing agent during

appointments . . .

the war. Harold H. Wilkinson has been appointed a manufacturer's representative for the company's general division. Mr. Wilkinson will handle sales in Pennsylvania, Maryland, Delaware and New Jersey.

R. B. Snyder

C. E. Hall

CLIFFORD E. HALL as sales manager for the Incineration Div., Bowser, Inc. He will direct a sales and promotion program for the "Incinor" line of gas fired incinerators. Formerly Mr. Hall was promotion manager of the American Gas Association.

WILLIAM J. BALDWIN as West Coast technical representative for Allegheny Ludlum Steel Corp. He will be on the staff of R. J. Swan, regional manager. Mr. Baldwin's headquarters will be in the company's Los Angeles office.

THE BORSTEIN ELECTRIC CO., Camden, N. J., as distributors of electronic air cleaners for the Air Conditioning Div., Westinghouse Electric Corp. Territory covers Burlington, Ocean, Camden, Gloucester, Salem, Cumberland and Atlantic counties. The Air-Heet Corp., Chicago, will sell the company's electronic air cleaners in the Chicago metropolitan area.

JAMES B. CLOW & SONS, 201-209 N. Talman Ave., Chicago, as distributors of residential and commercial air conditioners in northern Illinois, including Chicago, for Airtemp Div., Chrysler Corp. Truog-Nichols Distributing Co. has been named wholesale distributor for residential air conditioning products in the Kansas City area.

J. W. CALHOON as sales representative for the Aldrich Co., covering Iowa, Nebraska, Kansas and western Missouri.

WHITE SALES ASSOCIATES, 1416 Central Parkway, Cincinnati, as representatives for Binks Mfg. Co., handling forced and natural draft cooling towers in the Cincinnati territory.

D. N. LATUS AND CO., 1531 National Ave., Helena, Mont., as distributors of gas and oil space heaters and other equipment in Montana and 11 counties of northern Wyoming for Perfection Stove Co.

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Hardened
Screwnails
for fastening
SHEET METAL to WOOD
WOOD to WOOD
or other fastenings
where you need
NAIL DRIVING SPEED with
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FITS like a Glove
. . . every GALVAN ELBOW fits perfectly, snugly . . . because it's precision made! That's the ONLY way GALVAN makes elbows!
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At Your Jobber
• In All Sizes
• In All Gauges
• In All Metals
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Manufacturing Co.
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Made in 28, 26, and 24 gauge steel hot dipped galvanized after formation.

Sizes from 1" to 6". Angles from 10 degrees to 90 degrees.

Also in Copper, Aluminum and Stainless Steel.

Catalog available from your jobber.

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BEVERLY SHEARS SAVE TIME · LABOR · MATERIAL

Make any cut—curved, straight or irregular, faster, easier and better with less material waste on a Beverly Throatless Shear. You can turn work to *any* position and make a clean cut as you go. Handles heavy gauges with ease—lighter metals without distortion. 4 models—capacities 18 gauge to 3/16" mild.

B-3 with Ball Bearing Hold Down

INSIDE SLOTTER

8" Reach—16 ga. capacity

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See your Beverly Dealer or write for illustrated catalog.

***Beverly* SHEAR MFG. CO.**

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appointments . . .

W. L. KELL as sales manager for International Sales Co. Mr. Kell has been associated with the gas industry since 1935. He became San Francisco branch manager for General Controls Co. in 1944 and later became national sales manager and manager of the heating controls division of that company.

W. L. Kell

K. H. Crone

K. H. CRONE as division manager of the New York sales office of Gustin-Bacon Mfg. Co. Mr. Crone has been with the company since 1946, and was assistant Chicago division manager prior to his recent promotion.

STATE DISTRIBUTING CO., INC., 3500 W. Pierce St., Milwaukee, as a distributor for the appliance division of Servel, Inc., in eastern Wisconsin and part of Michigan. The L. W. Wind Corp., 101 S. Meramec St., Clayton, Mo., has been named an air conditioning distributor for the company in the St. Louis area, covering 51 counties in the eastern half of Missouri and four counties in Ill. The Federal Supply Co., Inc., Oklahoma City, was named distributor for air conditioning equipment throughout the state of Oklahoma. Headquarters are located at 120 E. Main St.

AIR FILTER SALES & SERVICE CO., INC., San Francisco, as sales and service representative in northern California for Farr Co.

DON LESLIE & CO., Wayne, Pa., as representative for Meier Electric & Machine Co., Inc., in the eastern states.

FOULDS ASSOCIATES, Boston, as sales representative in the New England states for Marlo Coil Co.

THE HAROLD E. SWEENEY CORP., Philadelphia, as wholesale distributor of gas fired furnaces for the Air Conditioning Div., General Electric Co. Simons Sheet Metal Co., Youngstown, was appointed retailer-wholesaler for the company's home heating and cooling equipment in the Youngstown area.

RICHARDSON-WAYLAND Electrical Corp., Roanoke, Va., as distributor for the Remington Air Conditioning Div., Remington Corp., to handle window and console room air conditioners in western Virginia and southern West Virginia.

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NOW AVAILABLE TO YOU!

A complete reprint of the valuable series

by J. J. Mirabile

This practical series covers every angle of oil burner work, including arrangement of shop . . . stocking of parts . . . record-keeping . . . installation procedures . . . the handling of crews . . . how to make heating surveys . . . how to size combustion chamber . . . how to install thermostat . . . how to start the burner . . . how to use testing instruments . . . and how to operate a service department. It contains, as well, a complete list of causes and cures of oil burner troubles that will serve as a reliable guide in making service calls.

Every shop handling oil burner jobs should own this book. Full size, 8½ by 11 inches — 57 pages of practical helps. Send $1.00 for a copy to the address below.

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- *A practical, accurate air velocity meter for heating, air conditioning, and ventilating work. Indispensable for measuring grille velocities and air deliveries from registers and grilles; for balancing forced air heating systems, and for checking air distribution of all kinds of ventilating systems.*
- *Accurate velocity readings, automatically averaged over a 3" dia. free area, instantly indicated in feet per minute.*
- *Extension handle facilitates positioning of instrument away from the observer for readings in hard-to-reach locations, or where the observer's body would interfere with the normal air movement.*
- *Unique scale lock makes possible to retain scale reading when desired until the lock is released—an indispensable feature where extension rod is used to position instrument away from the observer.*
- *Leather case is furnished as standard equipment for added protection when the instrument is not in use and for convenience when carrying it in the pocket.*

Ask your Jobber for the FloRite or write for Leaflet 760.

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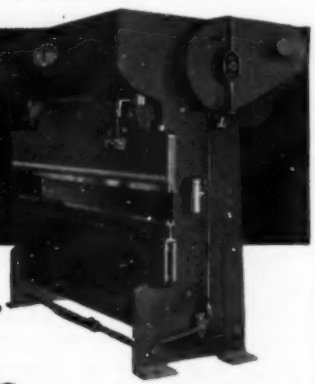
7301 PENN AVENUE • • PITTSBURGH 8, PA.

SHEET METAL and PLATE WORK
Bending, Forming, Notching, Blanking, etc



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PRESS BRAKES

Series A Light Duty Model CHICAGO Press Brake

In the almost limitless variety of operations on sheet metal and steel plate, CHICAGO Press Brakes are well known for their consistent production performance. The proved all-steel construction and the flexibility of design in all models offer a versatility that is hard to beat. With 42 standard sizes, there is a CHICAGO steel press brake to suit your requirements.

Full Particulars and Recommendations for Any Job on Request

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model announcements

field

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- World's most widely used Barometric Draft Controls.
- The controls preferred by manufacturers, jobbers and dealers.
- Publishers of the first draft control guide for installing dealers.

FIELD CONTROL DIVISION
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AFFILIATES
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in home incinerators!

IT'S CLOG-PROOF, RUST-PROOF
AND WON'T BURN OUT.....

The COLE HOT BLAST
HOME INCINERATOR

meets homeowners' every demand for top value and performance. Here are just a few of the Cole features:

- Economical gas operation with exclusive, patented, air-jet combustion. Genuine refractory tile lining . . . rust-proof, clog-proof, permanent.
- Smokeless and odorless.
- Dependable disposal of every scrap of food, however wet.

Write today for complete specifications of both Deluxe and Standard Models.

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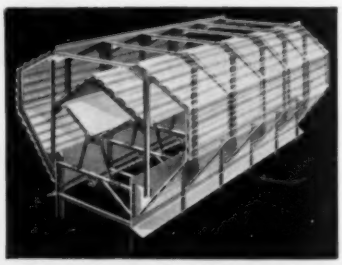


FOR ECONOMICAL HEAVY INDUSTRY VENTILATION • CHOOSE VERSATILE

BURT MONOVENT

While the Burt Monovent Continuous Ridge Ventilator is used throughout industry, it is particularly efficient in steel mills, foundries, forge shops, etc. The Monovent may be installed on any type roof. It converts the roof line to a gigantic exhaust valve that removes heat, smoke and fumes the entire length of the building, quickly and economically. And the Monovent's simple, sturdy, construction provides long, trouble-free life with practically no maintenance. See Sweet's or write for Bulletin SPV-6 for complete Burt Monovent data.

FAN & GRAVITY VENTILATORS - LOUVERS - SHEET METAL SPECIALTIES

The Burt Manufacturing Company

38 E. South St., Akron 11, Ohio
MEMBER POWER FAN MANUFACTURERS ASSOCIATION

appointments . . .

W. W. Stake

A. O. Dragge

WALTER W. STAKE as regional manager for the eastern district of A. O. Smith Corp. Mr. Stake, formerly assistant general sales manager for the Permaglas-Heating Div., has been with the company since 1945. Allen O. Dragge has been appointed regional manager of the Pacific Coast district. He will maintain headquarters in Los Angeles.

KASLE STEEL CORP., Cleveland, as distributor of aluminum mill products for the Reynolds Metals Co.

W. R. MOOK, JR., 3122 Pickwick Lane, Houston, as sales and service representative in southeastern Texas for Trion, Inc.

Obituaries

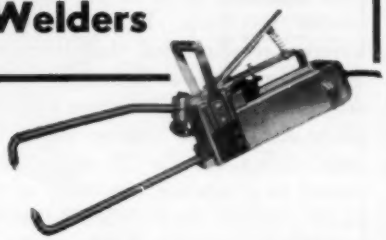
John V. Patten

JOHN V. PATTEN, chairman of the board and founder of the J. V. Patten Co., died on January 18 as the result of a paralytic stroke. In 1901 Mr. Patten was made secretary and treasurer of the Charles Smith Co., Chicago, becoming president of the firm in 1918, when it was renamed The Hero Furnace Co. In 1928 Mr. Patten sold his interest in the company and, together with his two sons, organized the J. V. Patten Co., of which he was president until 1951. At that time, he became chairman of the board, and his elder son, Don C. Patten, was elected president. His younger son, John H. Patten, is vice president.

J. Howard Smart

J. HOWARD SMART, president of Tuttle & Bailey, Inc., died January 2 after a year's illness. Mr. Smart joined the production department of the firm in 1923 and three years later entered the sales division. He served as assistant sales manager and also as sales manager, becoming a vice president of the company in 1941. In 1951 he was made executive vice president and secretary, and in September, 1952 he became president. He was a member of the American Society of Heating and Ventilating Engineers.

There's a place in every Shop for these handy *GREYHOUND* Spot Welders



Can be used as both PORTABLE and STATIONARY

For as little as **$115.23**

MODEL SP
110 volts A.C. Also available for 220 volts and special voltages. Welds mild or stainless steel to 1/8" (combined thickness). Also galvanized up to two (2) pieces of 18 gauge.
WEIGHT.....23 pounds.

MODEL BW
220 volt A.C. (Special voltages available). Welds mild or stainless steel 1/4" (combined thickness). Also galvanized up to two (2) pieces of 16 gauge.
WEIGHT.....33 pounds.

Water Cooled Arms & Timer available
WRITE for Information & Descriptive Material

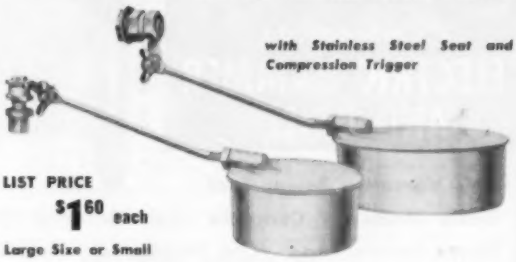
DISTRIBUTORS. WRITE: Territories open.
Fast moving item. Big advertising program for 1954.

DURO-DYNE CORPORATION
BOX 164 NEW HYDE PARK, N. Y.

MOREY FLOAT VALVES

Both valves operate either horizontally or vertically

with Stainless Steel Seat and Compression Trigger



LIST PRICE
$1.60 each
Large Size or Small

Stainless steel orifice, brass wing nut and bolt. Neoprene gasket. High impact Neoprene Styrene float. **STOCKED BY JOBBERS — 12 valves per carton. 6 cartons per case.** Subject to standard jobbing discounts.

FLOW DATA

Large Valve: 240 gallons per hour at 60 p.s.i.
Small Valve: 190 gallons per hour at 60 p.s.i.
Will work in 1 inch of water!

Used as original equipment on evaporative coolers of outstanding reputation. Excellent on poultry and small stock troughs as well as cooling towers!

DAN MOREY
814 South Robertson, Los Angeles 35, Calif.

BIG PROFITS FOR METAL DEALERS

get *CHEM-O-GLAS* facts

IT MAY PAY YOU WELL to get full details on PROFITS now possible through use of these shatterproof, translucent, chemical-glass sheets.

Only one of its type L.A. Code Approved as "Flame resistant." Colorful. Colorfast. Fadeproof. Maintenance-free. No paint needed—ever. Precision-molded under 400,000 lbs. to give greater strength of 26,000 psi, and absolute uniformity throughout. 5 colors in flat, or exclusive RIBBED shape so easy to install without costly special moldings. Small 1/8" rib overlap saves up to 5c per sq. ft. Get facts!

"Tomorrow's Product"—available today. For complete facts, prices, free "Idea Folder" or name of nearest dealer, tear out coupon, now. Mail when convenient.

FLAT CHEM-O-GLAS ENDS BREAKAGE

Use as replacement for standard glass.

NEWEST USE: To replace glass in Jalousie or Louver Windows. "Lets light in; keeps sight out." 5 colors.

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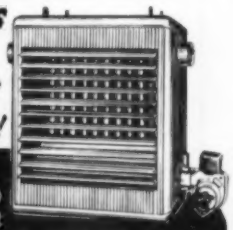
RUSH ME: ☐Chem-O-Glas "Idea Folder." ☐ Name of nearest dealer. ☐ Dealer franchise data.

Name.....
Company.....
Address.....
City.....State.....

SEND NOW

3 SPECIFIC SOLUTIONS TO 3 SPECIFIC HEATING PROBLEMS

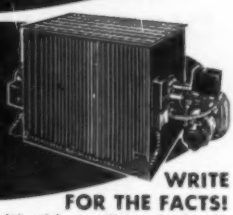
Only DELTA Makes All 3!



DELTA DIRECT-FIRED OIL UNIT HEATER
For lowest cost industrial heating. Ideal for factories, warehouses, commercial buildings, and locations requiring high velocity air delivery.

DELTA SUSPENDED-HORIZONTAL FURNACE
Especially shallow for narrow crawl spaces and attics. Larger models for offices, partitioned spaces, stores, gas stations.

DELTA GUN-TYPE FLOOR-O-LEVEL FURNACE
Provides an extremely effective, yet extremely economical central heating system for small cellarless homes.



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YOU can beat all your competition with this profit-packed trio of fine heating equipment . . . made exclusively and only by DELTA!

DELTA HEATING CORPORATION, TRENTON 8, NEW JERSEY
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SAVE MUSCLE ON ANY SHEET METAL PROJECT!

Wodack® DO-ALL®
Combination
ELECTRIC HAMMER AND DRILL

This Versatile Power Tool Drills Holes in Concrete and Masonry 15 Times Faster Than "Old Fashioned" Muscle!

Strikes 2400 hard blows a minute. Drills concrete up to 3" per minute. Star drills are made in 20 diameters (¼" to 1½") and five drilling lengths. Runs from any AC or DC light socket. Can be converted to a heavy-duty ⅜" electric drill in a minute.

You save by dealing direct with the factory . . . and you always have the assurance of fast, dependable service.

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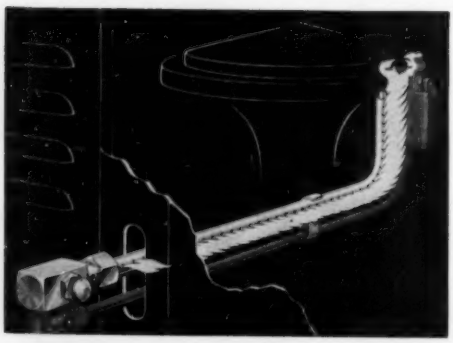
The MODERN LIGHTER TUBE

With the Slanting Blue Flame



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★ **SAFE** as the unit it serves.
★ **DEPENDABLE** as the gas supply.
★ **SIMPLE** as the scratch of a match.
★ **CONVENIENT** as the touch of a button.

MODERN MATERIALS COMPANY
Northville, Michigan

MORE APPRENTICES —

(*Continued from page 78*)

a seaming machine. The techniques of this procedure were explained by A. L. Veverka and T. J. Boyd, Follansbee Steel Corp. In his introductory statement, Mr. Veverka recommended that sheet metal roofing contractors use the term "terne" when talking with customers about this type of roofing material because it more nearly describes the material used. He pointed out that terne roofing sheets are 30 gage sheet steel that has been treated in a solution consisting of 20 per cent tin — which acts as a bond — and 80 per cent lead — which provides the protection for the steel.

The pan forming machine was demonstrated. Its capacity for 20 in. wide rolls is 50 ft per min. The machine is manually operated and is easily portable to working areas on the job site. The stapling machine is actually a heavy duty stapler that has been developed from the same principle used for desk staplers. However, the staple is ¾ in. long, and a heavy blow by a mallet is required to drive the staples through the fastening cleat. The advantage of the stapler, he said, is in the time saved, since only one blow is needed for fastening. This technique also makes it possible to drive the staple closer to the 90 deg angle of the cleat, thus enabling the cleat to better hold the pan in the desired position, he pointed out.

The third part of this mechanized procedure is the seaming machine which weighs 56 lb and is geared to complete a 20 ft seam in one minute. The seamer is started at the highest point of the roof and turns a single seam on its first pass to the end of the pan. A double seam is formed on the second pass, after which the seam is ready for soldering to complete the operation.

Should Merchandise "Quality"

The prospects for business in 1954 were projected by J. P. Field, vice president, The Williamson Heater Co., who told the contractors and dealers that competition for business is going to be keener during 1954 than at any time since the end of World War II. He said this competition would come more from outside the industry than from within. He pointed out that automobile dealers, appliance dealers, home modernization contractors and furniture stores are actively engaged in a merchandising program that will influence the home owner to spend his earnings for the products they have to offer.

Mr. Field said that there was no reason for warm air heating and residential cooling dealers to take steps to lower their prices. Rather, they should offer only "quality installations" at a fair profit and organize a merchandising program that will be just as effective as any being conducted by other industries. He suggested that the dealer work closely with the manufacturer and wholesaler so that the most effective results could be achieved from the coordinating of merchandising and advertising programs.

CONNECTICUT
UNIVERSAL
BOX & PAN
BRAKES

- RUGGED
- VERSATILE
- ECONOMICAL

Our finger design provides a front surface free from clamps and thumb screws. There is extra clearance under fingers for flanged sheets. Hardened finger tips! All steel construction! Universal Brakes made in 4, 6 and 8 Ft. lengths, 14 Ga. capacity.

Write for Catalogue of our complete line

W. WHITNEY STUECK, INC.

FERRY ST., OLD SAYBROOK, CONN.

"I'm installing PATCO WARM-AIR BASEBOARD in Carl Metz Homes," says Don Doskow, 3rd generation Philadelphia heating contractor, "because it's much easier and faster to install. I can do more jobs with Patco and my customers like it better, too."

You'll be amazed at how PATCO WARM-AIR BASEBOARD can save YOU time and labor. Write Dept. A today for full details.

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Phila. 6, Pa.

PATCO
AIR-BASEBOARD
THE WALL RADIATES HEAT

PROVEN PERFORMANCE!

All Galvanized, Welded Construction
Noiseless Precision Bearings
Perfectly Balanced Rotor Head

Made from Prime Galvanized Sheets
Riveted Automatically

These outstanding ventilators, made by Greenheck Bros., are built for long, trouble-free service. And they are *performance proven.* Buyers are enthusiastic about their rugged construction and efficient operation.

GREENHECK SCHOFIELD, WISCONSIN

Write today for complete information.

MILTON SHEET METAL
MACHINERY SPECIALISTS

STOCK DELIVERY ON PEXTO, CHICAGO BRAKES, DIACRO, ROUSSELLE PRESSES, KIDDER, WHITNEY, ROTEX PUNCHES, REX WELDERS

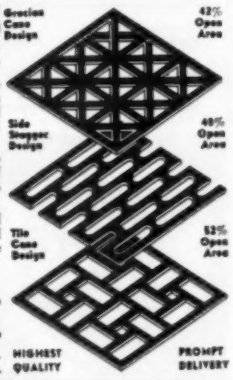
WE CARRY A COMPLETE STOCK OF NEW & USED HAND & POWER MACHINERY.

WE STOCK PUNCHES & DIES & ADAPTERS FOR ALL PRESSES & BRAKE DIES, SHEAR BLADES & SPOT WELDER-TIPS & HAND TOOLS.

MILTON EQUIPMENT COMPANY

N.E. COR. 4th & Race St. Phila. 6, Pa.
WAlnut 2-1734

PERFORMATED METALS
FOR EVERY INDUSTRIAL USE



The "Ornamental" light-gauge designs here illustrated are only a few of the many you can choose from in our new Catalog 39 and we are always pleased to quote on original designs or special work of any kind.

For larger unit-openings, using metals up to ¼" in thickness, we offer a wide variety of equally attractive designs in our Catalog 36 on Diamond Architectural Grilles.

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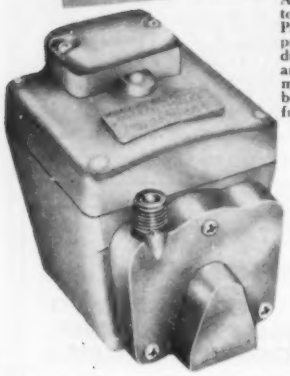

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NEW LITERATURE —

(Continued from page 128)

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BROCHURE COVERS thin gage and close tolerance ferrous and non-ferrous strip metals rolled to thicknesses of from 0.0005 in. to 0.125 in., available in tolerances as close as ± 0.0001 in. — Industrial Div., American Silver Co., 36-07 Prince St., Flushing 54, N. Y. Typical industrial uses of the strip metals are listed.

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FOLDER DESIGNED for consumer mailing points out to the home owner how a fuel oil filter placed in the fuel line between tank and burner can prevent water, rust or dirt from reaching the burner — Klemm Automotive Products Co., Dept. J., 1718 N. Damen Ave., Chicago 47. The filter, built to withstand heavy line pressure, can be used on either gravity or pressure type burners.

Tapping Screws

BOOKLET ON tapping screws (No. TL-88) describes seven types designed to provide quick, economical and secure fastenings in materials ranging from plywood to plastics and metals — Townsend Co., New Brighton, Pa. A feature of the booklet is a selection chart which recommends screws for various applications.

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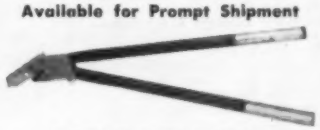

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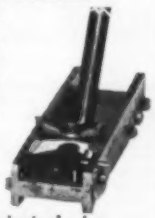

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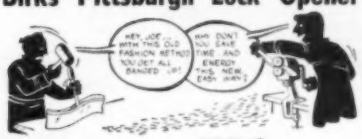

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INDEX TO ADVERTISERS

A & A Register Co., The 137
A-J Mfg. Co. 8
A-P Controls Corp. 5
Adams Co., The 148
Adams Mfg. Co. ..... *
Adelta Mfg. Co., Inc. ..... *
Aerofin Corp. ..... *
Air Controls, Inc., Div. of the Cleveland Heater Co. ..... *
Air Control Products Inc. 102
Air Devices, Inc. 128, 129
Air Filter Corp. ..... *
Airtemp Div., Chrysler Corp. . 91
Ajax Furnace Fitting Co., Div. Cincinnati Sheet Metal & Roofing Co. ..... *
Allegheny Ludlum Steel Corp. *
Allen Co., Inc., L. B. 148
Allen Vent. Div., Production Planning Co. ... *
American Air Filter Co., Inc. *
American Brass Co., The .... *
American Metal Products Co. Inc. ..... *
American Radiator & Standard Sanitary Corp. ..... *
Anchor Div., Stratton and Terstegge ..... *
Anchor Post Products, Inc., Fluid Heat Div. ..... *
Anemostat Corp. of America . *
Armco Steel Corp. 104
Armstrong Co., The ..... *
Armstrong Furnace Co. 89
Atlas Mfg. Co. ..... *
Auer Register Co., The ..... *
Auto-Flo Corp. 32
Automatic Humidifier Co. 19

Bacharach Industrial Instrument Co. 143
Barber-Colman Co. ..... *
Bard Mfg. Co. ..... *
Barth Eng. Co. ..... *
Beckett Corp., R. W. ..... *
Berger Bros. Co. ..... *
Berger Mfg. Div., Republic Steel Corp. ..... *
Besser Metal Products Corp. . 138
Bethlehem Steel Co. ..... *
Bett-Marr Manufacturing Co. *
Beverly Shear Mfg. Co. 142
Birks Mfg. Co. 149
Bishop & Babcock Mfg. Co., The ..... *
Boston Machine Works Co. .. *
Brandes Company 132
Brauer Supply Co., A. G. ... 147
Bremil Mfg. Co. 147
Brundage Co. ..... *
Bryant Corp., C. L. ..... *
Bryant Heater Div., Affiliated Gas Equipment, Inc. ..... *
Burt Mfg. Co., The 144

Cam-Stat Inc. ..... *
Carrier Corp. ..... *
Central-West Machinery Co . 149
Century Electric Co. 99
Century Engineering Corp. .. *
Champion Furnace Pipe Co. . *
Char-Gale Mfg. Co. 7
Chase Brass & Copper Co. .. 111
Chemold Co. 145
Cheney Flashing Co. ..... *
Chevrolet Motor Div., General Motors Corp. 20
Cincinnati Elbow Co., The .. 136
Circulataire Div., Corlett-Turner Co. ..... *
Clarage Fan Co. 18
Clayton & Lambert Mfg. Co. 71
Cleveland Humidifier Co., The *
Cole Hot Blast Mfg. Co. 144
Coleman Co., Inc., The ..... *
Condensation Engineering Corp. ..... *
Connor Engrg. Corp. ... 75, 119
Coogan Co., Frank J. ..... *
Cook Co., Loren ..... *
Corlett-Turner Co. ..... *
Crescent Tool Co. 86
Crucible Steel Co. of America 77

Daffin Mfg. Co. ..... *
Dahlstrom Machine Works, Inc. ..... *
Damp-Vent Co. ..... *
Day Co., The ..... *
Delco Appliance Div., General Motors Corp. ..... *
Delco Products Div., General Motors Corp. 26
Delta Heating Corp. 145
Detroit Controls Corp. 36
Diamond Mfg. Co. 147
Dieckman Co., Ferdinand, The 142
Dole Valve Co. ..... *
Doyle Vacuum Cleaner Co. .. *
Dreis & Krump Mfg. Co. 143
Duo-Therm Div. of Motor Wheel Corp. ..... *
Duro-Dyne Corp. 145

Elgen Mfg. Corp. 130, 131
Elgo Shutter & Mfg. Co. .... *
Emerson Elec. Mfg. Co., The *
Excelsior Steel Furnace Co., The ..... *

Fallsington Mfg. Co. ..... *
Federated Metals Division ... *
Field Control Div. of H. D. Conkey & Co. 143
Fireline Stove & Furnace Lining Co. ..... *
Follansbee Steel Corp. 135

Galvan Mfg. Co. 141
General Automatic Products Corp. ..... *
General Controls Co. 88
General Electric Co. . 79, 114, 115
General Filters, Inc. ..... *
Gerett Corp., M. A. 148
Glasfloss ..... *
Glass Fibers, Inc. ..... *
Glycolator Div., Iron City Chem. Co. 135
Gray Metal Products, Inc. ... *
Greenheck Bros. Mfg. Co. ... 147
Gustin-Bacon Mfg. Co. ..... *

Hallmor Inc. 139
Hall-Neal Furnace Co. ..... *
Hammel Radiator Engrg. Co. *
Hart & Cooley Mfg. Co. . 11, 139
Heil Co., The 82
Henry Furnace Co., The 67
Hussey & Co., C. G. ..... *

Illinois Testing Laboratories, Inc. ..... *
Independent Register Co., The *
Ingersoll Steel Div., Borg-Warner Corp. 122
Inland Steel Products Co. .... *
Insto-Gas Corp. ..... *
Insulating Castable Corp. .... *
International Heater Co. 63
International Nickel Co., The 106
Iron Fireman Mfg. Co. 105

Jackson & Church Co. ..... Inside Front Cover
Janitrol Div. Surface Combustion Corp. 72, 73
Johns-Manville 107
Johnson Gas Appliance Co. .. *
Johnson Ladder Shoe Co. 149
Juniper Elbow Co., Inc. 149

Kaustine Furnace & Tank Corp. ..... *
Kent Company, Inc., The .... *
Kirk & Blum Mfg. Co., The *
Ko-Z-Aire Products, Inc. .... *
Kraus Mfg. Co., Charles E. . *
Krueger Air Conditioning Co. *
Krueger Sentry Gauge Co. ... 6

Lau Blower Co., The ..... *
Lennox Furnace Co. ..... *
Levow, David ..... *
Lexington Supply Co. ..... *
Libbey-Owens-Ford Glass Co., Fiber Glass Div. 103
Libert Machine Co. ..... *
Lima Register Company 81
Little Giant Vaporizer Co. ... 148
Lockformer Co., The 9

Made-Rite Co., Inc. ..... *
Maid-O'-Mist, Inc. ..... *
Majestic Co., Inc., The 121
Marley Co., The 35
Marshalltown Mfg. Co. ..... *
Maxitrol Co. ..... *
McLarty Systems ..... *
Melaway Corp. ..... *
Metal Wool Div. of Carey Electronic Eng. Co. 125
Metromatic Mfg. Co. ..... *
Meyer & Bro. Co., F. ..... *
Midco Register Corp. 13
Mid-Continent Metal Products Co. ..... *
Miller & Doing 147
Miller Electric Mfg. Co. ..... *
Milton Equipment Co. 147
Milwaukee Electric Tool Corp. *
Milwaukee Gas Specialty Co. 33
Minneapolis-Honeywell Regulator Co. 16, 17
Modern Materials Co. 146
Morey, Dan 145
Morrison Products, Inc. 108
Morrison Steel Products, Inc. *
Morse-Smith-Morse Co., The . *
Mueller Climatrol 21

National Lock Company 133
National Metal Fabricators .. 139
National Super Service Co., Inc. ..... *
Niagara Furnace Div., Forest City Foundries Co., The 69
Niagara Machine & Tool Works 37
Nu-Way Corp. ..... *

Ohio Valley Hardware & Roofing Co. 34
Oil Heat Institute of America 112
Olsen Mfg. Co., C. A., The . 27
Oran Co., Inc. ..... *
Owens-Corning Fiberglas Corp. 110
Owens Co., H. ..... *

Packard Elec. Div., General Motors Corp. ..... *
Palmer Mfg. Corp. 109
Parker-Kalon Div., General American Transportation Corp. 140, 141
Patco Mfg. Co. 147
Patten Co., J. V. 117
Payne Furnace Div., Affiliated Gas Equipment, Inc. ..... *
Peck, Stow & Wilcox Co., The *
Peerless Electric Co., The .. 28
Peerless Furnace & Foundry, Inc. 95
Penn Controls, Inc. 85
Penn Ventilator Co. ..... *
Perfection Stove Co. 113
Petersen Mfg. Co. ..... *
Petro 84
Portable Electric Tools, Inc. *
Premier Co. 124

Quickdraft Co., Div., Hall's Safe Co., The ..... *
Quiet Automatic Burner Corp. *
Quincy Stove Mfg. Co., The . *

R C S Tool Sales Corp. ..... *
Radiant Utilities Corp. 123
Ralph Mfg. Co., Inc. ..... *
Randall Graphite Bearings, Inc. ..... *
Redmond Distributors, Inc. .. *
Reiner & Campbell Co., Inc. . 149
Remington Arms Co., Inc. .. *
Revere Copper & Brass, Inc. . 57
Reynolds Metals Co. ..... *
Reznor Mfg. Co. 118
Rheem Mfg. Co. 93
Richmond Radiator Co. 25
Roberts-Gordon Appliance Co. *
Rochester Mfg. Co., Inc. .... *
Rock Island Register Co. .... *
Royal Jet, Inc. 10
Ruby Chemical Co. ..... *
Ryerson & Son, Inc., Jos. T. 38

St. Clair Metal Products ..... *
Sall Mountain Co., The ..... *
San Angelo Foundry & Machine Co. ..... *
Schaefer Brush Mfg. Co. .... *
Scully Signal Co. 134
Sequoia Mfg. Co. ..... *
Servel, Inc. 98
Siemon Mfg. Co. ..... *
Skil Corp. ..... *
Skuttle Mfg. Co. ..... *
Smith, R. E. 140
Southwest Mfg. Co. ..... *
Standard Heating Equipment Co. ..... *
Standard Stamping & Perforating Co. 90
Steinen Mfg. Co., Wm. 127
Stewart-Warner Corp., U. S. Machine Div. 14, 15
Stueck, Inc., W. Whitney 147
Sunbeam Air Conditioner Div., American Radiator & Standard Sanitary Corp. ..... *
Sundstrand Engrg. Co. 12
Sundstrand Machine Tool Co., Hydraulic Div. ..... *
Sun-Ray Burner Mfg. Corp. . *
Surface Combustion Corp. 72, 73
Superior Metal Fabricating Co. *
Swartwout Co., The ..... *
Syncromatic Corp. ..... *

Tecumseh Products Co. ..... *
Thermac Company ..... *
Thermo-Base Div., Gerwin Industries, Inc. ..... *
Thompson & Co. ..... *
Thor Metal Products Co., Inc. *
Thor Tool & Die Co. ..... *
Timken Silent Auto. Div., Timken-Detroit Axle Co., The ..... *
Titus Inc. 31
Toridheet Div., Cleveland Steel Products Corp. ..... *
Trade-Wind Motor Fans, Inc. *
Turner Brass Works, The .... *
Tuttle & Bailey, Inc. ..... *
Typhoon Air Conditioning Inc. *

Union Asbestos & Rubber Co. *
United States Register Co. .. 65
United States Steel Corp. 61, 83
U. S. Steel Supply Div., United States Steel Corp .. *
Utility Appliance Corp. 87

Van Packer Corp. ..... *
Velocity Power Tool Co. .... *
Viking Air Conditioning Corp. 59
Vyke Brake Co. 149

Walker Mfg. & Sales Corp. .. 120
Walton Laboratories Inc. ... *
Ward Machinery Co. ..... *
Washington Steel Corp. ..... *
Waterman-Waterbury Co., The 3
Wayne Home Eqpt. Co. ..... *
Webster Elec. Co. ..... *
Westinghouse Electric Corp., Sturtevant Div. 126
Wheeling Corrugating Co. .. *
White-Rodgers Elec. Co. ..... Outside Back Cover
Whitney Mfg. Co., W. A. ... 139
Whitney Metal Tool Co. .... *
Wilder Mfg. 137
Wilkoff Co. Inc., David L. .. *
Williams Division, Eureka Williams Corp. ..... *
Williamson Heater Co., The .. *
William Wallace Co. 94
Wilson & Co., Inc. ..... *
Wilson, Inc., Grant ..... *
Windmaster Corp. ..... *
Wisconsin Oil Burner Co. .... *
Wiss & Sons Co., J. 92
Wodack Electric Tool Corp. . 146
Wolff & Co., Benjamin ..... Inside Back Cover
Wood Co., John 22
Wysong & Miles Co. ..... *

Zink Co., John ..... *

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to users of

Stainless Steel Sheets

from

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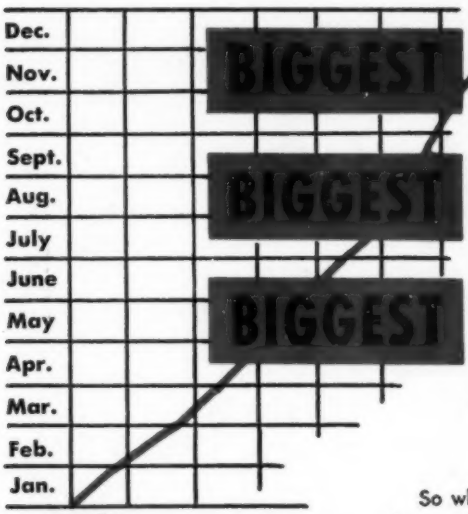

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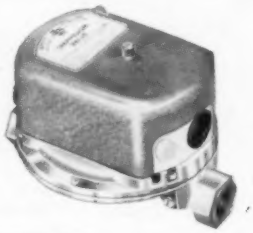

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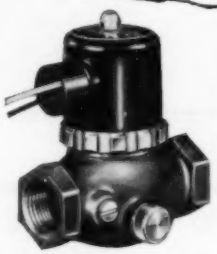

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Dept. 21B
1203 Cass Ave., St. Louis 6, Mo.

Gentlemen: Please send me your information bulletins.

Name_____

Home Address_____

City_____ Zone____ State_____

Kind of Work_____ Birthday_____
(DAY) (MONTH)